RAVEN

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AutoBoom™ Installation Manual

Brandt

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CHAPTER 1

Important Safety Information

Important Safety Information

NOTICE

Read this manual and the operation and safety instructions included with your implement and/or controller carefully before installing the AutoBoom™ system.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of your Raven equipment, contact your local Raven dealer for support.
- Follow all safety labels affixed to the AutoBoom system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact your local Raven dealer.

When operating the machine after installing AutoBoom, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate AutoBoom or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times when AutoBoom is engaged.
- Disable AutoBoom when exiting from the operator's seat and machine.
- Do not drive the machine with AutoBoom enabled on any public road.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling AutoBoom when the safe working distance has diminished.
- Ensure AutoBoom is disabled prior to staring any maintenance work on AutoBoom or the machine.

⚠ WARNING

- When starting the machine for the first time after installing AutoBoom, be sure that all persons stand clear, in case a hose has not been properly tightened.
- The machine must remain stationary and switched off, with the booms unfolded and supported, while installation or maintenance is conducted.

⚠ CAUTION

Hydraulic Safety

- Raven Industries recommends that appropriate protective equipment must be worn at all times when working on the hydraulic system.
- Never attempt to work on a hydraulic system with the equipment running. Care should always be taken when opening a system that has been previously pressurized.
- When disconnecting the hydraulic hoses or purging is required, be aware that the hydraulic fluid may be extremely hot and under high pressure. Caution must be exercised.
- Any work performed on the hydraulic system must be done in accordance with the machine manufacturer's approved maintenance instructions.
- When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure that precautions are taken to prevent any foreign material or contaminants from introduced into the machine's hydraulic system. Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valves.

Electrical Safety

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Ensure that the power cable is the last cable to be connected.

CHAPTER 2

Introduction

Introduction

Congratulations on your purchase of the Raven AutoBoom system! This system is designed to provide automated boom height adjustment for agricultural spraying equipment.

This manual applies to the following machines. For future reference, write the serial number of your machine in the space below.

MAKE: Brandt
MODEL:
YEAR:
SERIAL NUMBER:

FIGURE 1. **Brandt**

Note: *This manual contains the installation instructions for the PowerGlide, PowerGlide Plus, and UltraGlide systems. Be sure to identify which system you have and follow only the instructions for that system.*

Recommendations

Raven Industries recommends the following best practices before installing or operating the AutoBoom system for the first time, the start of the season, or when moving the AutoBoom system to another sprayer:

- Ensure the machine's hydraulic filters have been recently changed and there are no issues with the machine's hydraulic system (e.g., pump issues, faulty hydraulic motors, fine metal deposits in the hydraulic hoses, etc.).
- Operate each of the machine's boom hydraulic functions (i.e., tilt, fold, center rack, tongue extension, or other hydraulic valve functions) three time to ensure the machine's hydraulic valve is using fresh oil and debris is flushed through the hydraulic hoses, valves, and filters.
- Upon installation of the AutoBoom system, operate the boom and center rack raise/lower functions through the machine's manual control functions first before operating them via the AutoBoom controller/field computer to ensure the hydraulic system has been installed correctly and air is released from the system.

Raven Industries recommends the following best practices when installing the AutoBoom system:

- Use part numbers to identify the parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Do not remove plastic caps from a part until it is necessary for installation.

Tools Needed

The following tools are recommended for installation of the AutoBoom system:

- SAE standard-sized wrenches
- Cable ties
- Set of tools

Preparing for Installation

Before installing AutoBoom, park the machine where the ground is level, clean, and dry. Leave the machine turned off for the duration of the installation process.

During the installation process, follow good safety practices. Be sure to carefully read the instructions in this manual as you complete the installation process.

Point of Reference

The instructions in this manual assume that you are standing behind the machine, looking toward the cab.

Hydraulic Fittings

This manual may reference the following types of hydraulic fittings:

- SAE O-ring fittings
- ORFS (O-Ring Face Seal) fittings
- JIC fittings

SAE O-ring fitting

ORFS fitting

JIC fitting (M)

CHAPTER 3

PowerGlide

PowerGlide Kit Contents

This section contains a list of the components that are included in the PowerGlide AutoBoom kit. Before beginning the AutoBoom installation, compare the items in the AutoBoom kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

Note: *In addition to the following kit components, an axle kit is required for the operation of the PowerGlide AutoBoom system. For available kits and ordering information, contact your local Raven dealer.*

TABLE 1. PowerGlide Kit Contents (P/N 117-0230-029)

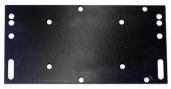
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Brandt AutoBoom Installation	016-0230-029	1
	Valve - PowerGlide AutoBoom	063-0131-127	1
	Plate - Hydraulic Block Mounting	107-0171-619	1
	Bracket - Brandt 4000 Left Weldment Receiver	116-0159-547	1
	Bracket - Brandt 4000 Right Weldment Receiver	116-0159-579	1

TABLE 1. PowerGlide Kit Contents (P/N 117-0230-029)

Picture	Item Description	Part Number	Qty.
	Wheel	322-0131-008	2
	Interface - Signal Inverter Boom Sense	063-0172-562	1
	Cable - 12’ Extension	115-0230-008	1
	U-bolt - 3-1/16” W x 5” L x 3/8” Thread	107-0171-607	2
	U-Bolt - 2-1/16” w x 3” L x 3/8” Thread	107-0171-609	8
	Bolt - 5/16”-18 x 7/8” Hex	311-0052-104	4
	Bolt - 1/2”-13 x 1-1/2” SS Hex	311-0058-186	4
	Nut - 1/2”-13 Zinc Hex	312-1001-043	4
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	20
	Washer - 5/16” Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-029)

Picture	Item Description	Part Number	Qty.
	Fitting - 3/4” JIC M/M/F Swivel Run Tee Adapter	333-0012-039	1
	Fitting - 9/16” JIC M/M/F Swivel Run Tee Adapter	333-0012-043	2
	Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	2
	Fitting - 3/4” SAE O-Ring (M) to 3/4” JIC (M) Straight Adapter	333-0012-093	3
	Fitting - 11/16” Hex to 9/16” O-Ring Plug	333-0012-194	2
	Hydraulic Hose - 9/16” JIC (F) to 9/16” JIC (F) - 48”	214-1000-735	2
	Hydraulic Hose - 3/4” JIC (F) to 3/4” JIC (F) 90° - 48”	214-1000-736	2
	Hydraulic Hose - 3/4” JIC (M) to 3/4” JIC (F) - 48”	214-1000-737	1

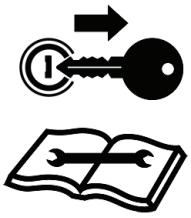
TABLE 3. PowerGlide Wiring Kit (P/N 117-0137-022)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom PowerGlide Calibration Operator’s	016-0130-061	1
	Controller - AutoBoom PowerGlide	063-0130-011	1

TABLE 3. **PowerGlide Wiring Kit (P/N 117-0137-022)**

Picture	Item Description	Part Number	Qty.
	Cable - AutoBoom Controller	115-0230-002	1
	Cable - AutoBoom Valve Harness	115-0230-003	1

Install the PowerGlide Hydraulic System



WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic filtration system.

Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly cause damage to the AutoBoom valve.

NOTICE

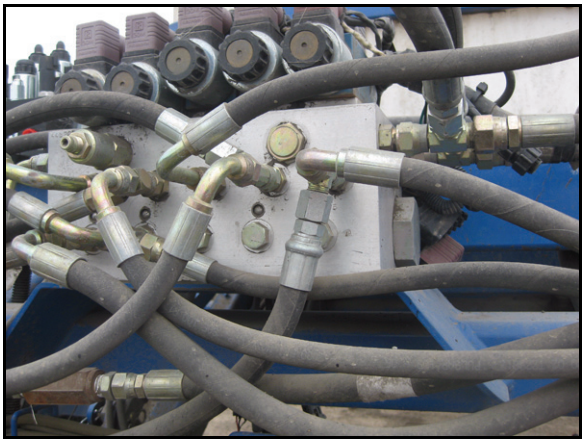
The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

Convert the Sprayer's Hydraulic Valve to Open Center (If Applicable)

The machine's main hydraulic valve may be configured as a "closed center" system. If so, it will have to be converted to an "open center" configuration. Complete the following steps to convert the machine's hydraulic system from a "closed center" to "open center" system.

Note: *Refer to the sprayer's operator's manual for instructions on how to convert the valve to an open center configuration. Obtain an open center solenoid from the dealer from whom the machine was purchased.*

FIGURE 1. Open Center Hydraulic Valve



1. Locate the master open center coil port on the machine's hydraulic valve.
2. Remove the cavity plug installed in the open center coil port.
3. Install the master open center coil in the machine's hydraulic valve.

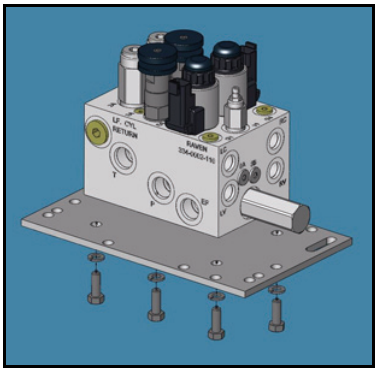
Install Fittings on the AutoBoom Valve

Before mounting the AutoBoom valve on the machine, install the proper fittings on the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure. Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 3/4" SAE O-Ring (M) to 3/4" JIC (M) Straight Adapter	333-0012-093	P, T, EF
Fitting - 11/16" Hex to 9/16" O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

FIGURE 2. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-127) to the mounting plate (P/N 107-0171-619) using four 5/16” hex bolts (P/N 311-0052-104) and four 5/16” lock washers (P/N 313-1000-019).

FIGURE 3. AutoBoom Valve Mounting on the Machine

2. Mount the AutoBoom valve to the machine’s center rack using two 3-1/16” W x 5” L x 3/8” thread U-bolts (P/N 107-0171-607) and four 3/8” zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses

⚠ WARNING

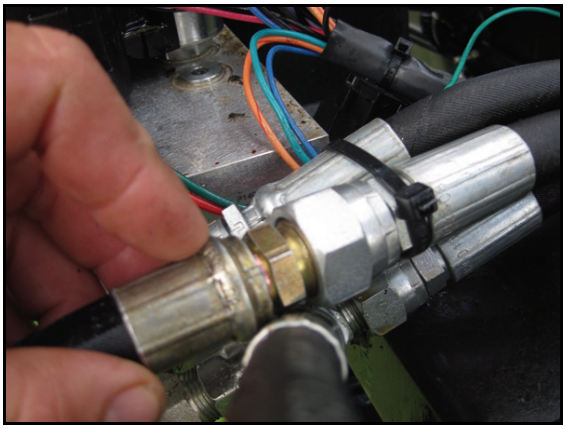
Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging the hydraulic hoses, be aware that the hydraulic fluid within the machine may be extremely hot and under high pressure.

⚠ CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material or contaminants from being introduced into the machine's hydraulic system.

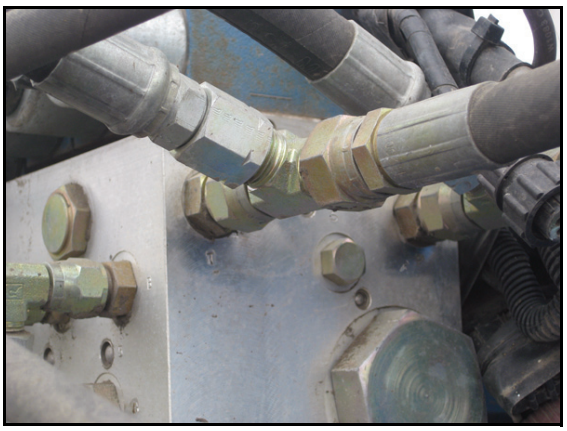
Objects or materials that are able to bypass the machine's hydraulic filtration system may adversely reduce performance and possibly damage the AutoBoom hydraulic valve.

FIGURE 4. Extension Hose Installed on the Machine's Pressure Hose



1. Disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the male end of the supplied hydraulic hose (P/N 214-1000-737) on the machine's pressure hose.
3. Connect the 90° end of the installed hydraulic hose to Port P of the AutoBoom valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) in the open pressure port of the machine's hydraulic valve.
5. Connect the 90° end of the installed hydraulic hose to Port EF of the AutoBoom valve.

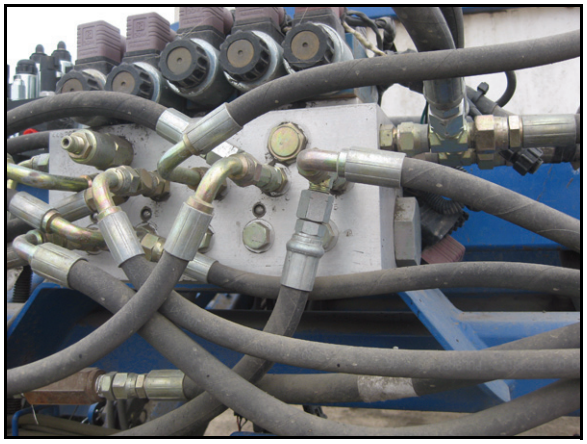
FIGURE 5. Tank Hose Installed



6. Disconnect the tank hose from the machine's hydraulic valve.
7. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) on the tank port of the machine's hydraulic valve.
8. Connect the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) on the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 6. Cylinder Hoses Installed



1. Disconnect the machine's left raise hose from the machine's hydraulic valve.

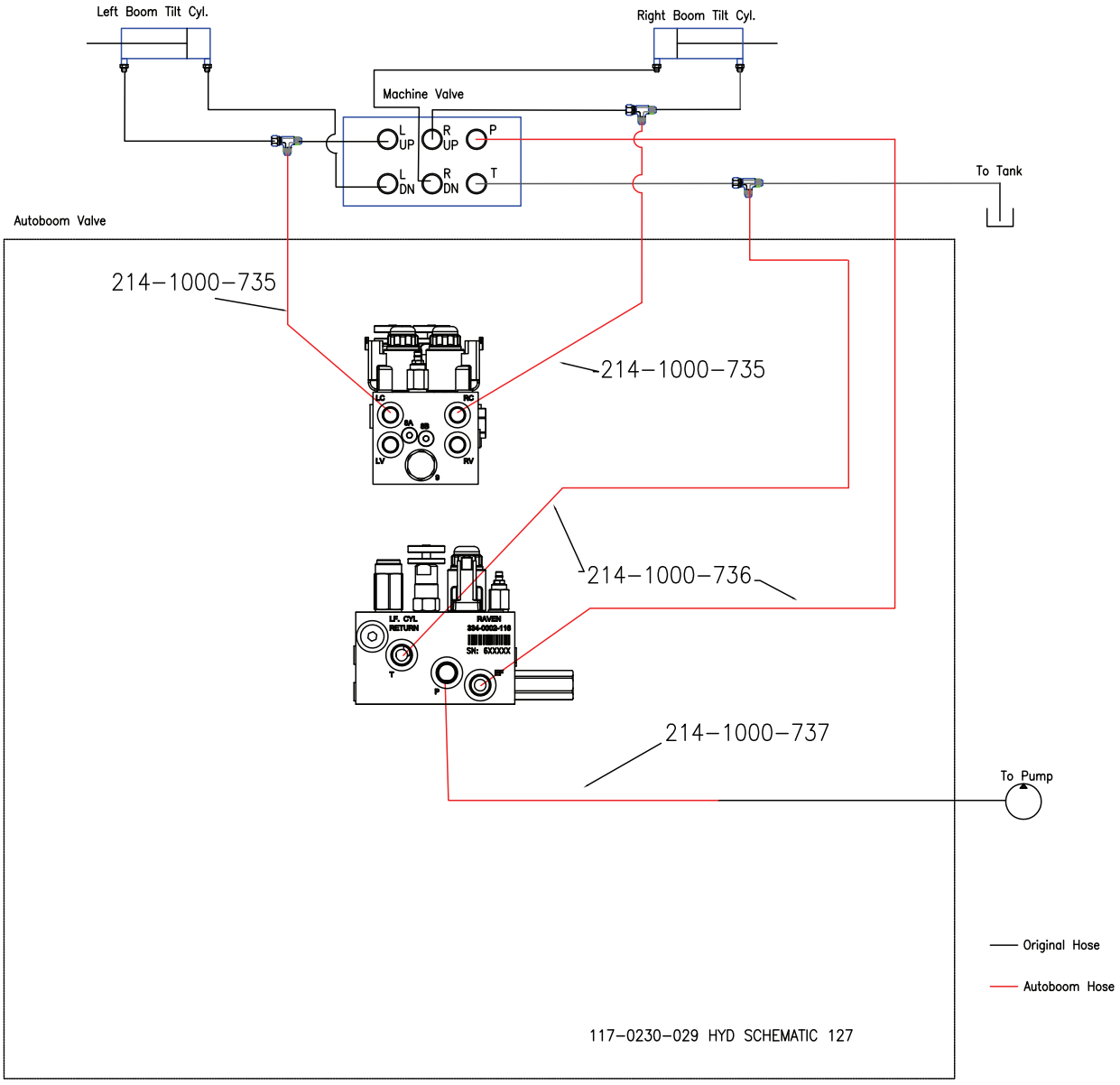
Note: *The left raise hose is the second hose from the right side of the machine's hydraulic valve.*

2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) on the open port of the machine's hydraulic valve.
3. Connect the machine's left raise hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-735) to the 90° end of the installed tee fitting.
5. Connect the 90° end of the installed hydraulic hose to Port LC of the AutoBoom valve.
6. Disconnect the machine's right raise hose from the machine's hydraulic valve.

Note: *The right raise hose is the first hose from the right side of the machine's hydraulic valve.*

7. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open port of the machine's hydraulic valve.
8. Connect the machine's right raise hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (p/N 214-1000-735) to the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port RC of the AutoBoom valve.

Hydraulic Schematic

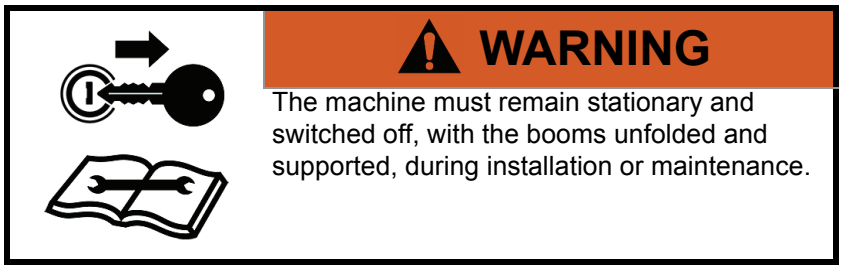


Install the Gauge Wheels

Gauge Wheel Mounting Locations

Wheel mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the wheels on the boom, ensuring the wheels will not interfere with or be damaged while folding or unfolding the booms.

Mount the Gauge Wheels



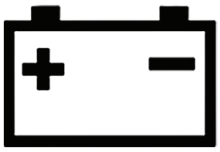
Note: *The appearance of the wheel axles may vary, depending on the type of wheel axle kit that was ordered with the AutoBoom system.*

FIGURE 7. Gauge Wheel Installed

1. Remove the lug nuts from the left wheel axle.
2. Place the wheel (P/N 322-0131-008) on the left wheel axle.
3. Reinstall the lug nuts on the wheel axle to secure the wheel.
4. Secure the left wheel mounting bracket (P/N 116-0159-547) to the front of the left boom using four 2-1/16” W x 3” L x 3/8” thread U-bolts (P/N 107-0171-609) and eight 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
5. Insert the left wheel axle into the left wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
6. Secure the gauge wheel assembly in the wheel mounting bracket using two 1/2”-13 x 1-1/2” SS hex bolts (P/N 311-0058-186) and two 1/2” zinc hex nuts (P/N 312-1001-043).
7. Repeat the steps above to install the right wheel.

Install the PowerGlide Wiring

Wiring Connections



⚠ CAUTION

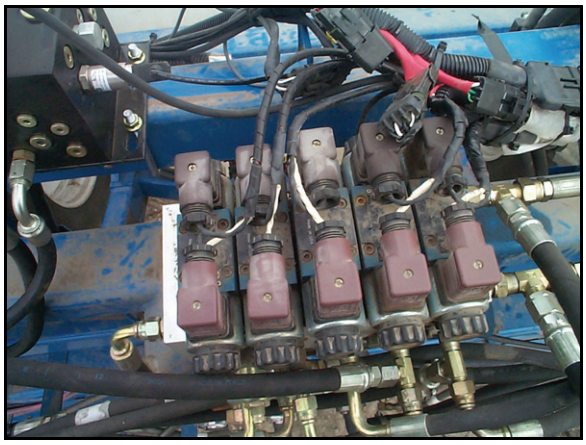
Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.

Note: *For wiring connections made outside the cab, apply dielectric silicone grease (P/N 222-0000-006) generously on both the male and female ends of the connectors. Application of the grease will prevent corrosion to the pins and wires.*

Connect the Harness Cable to the Boom Function Controls

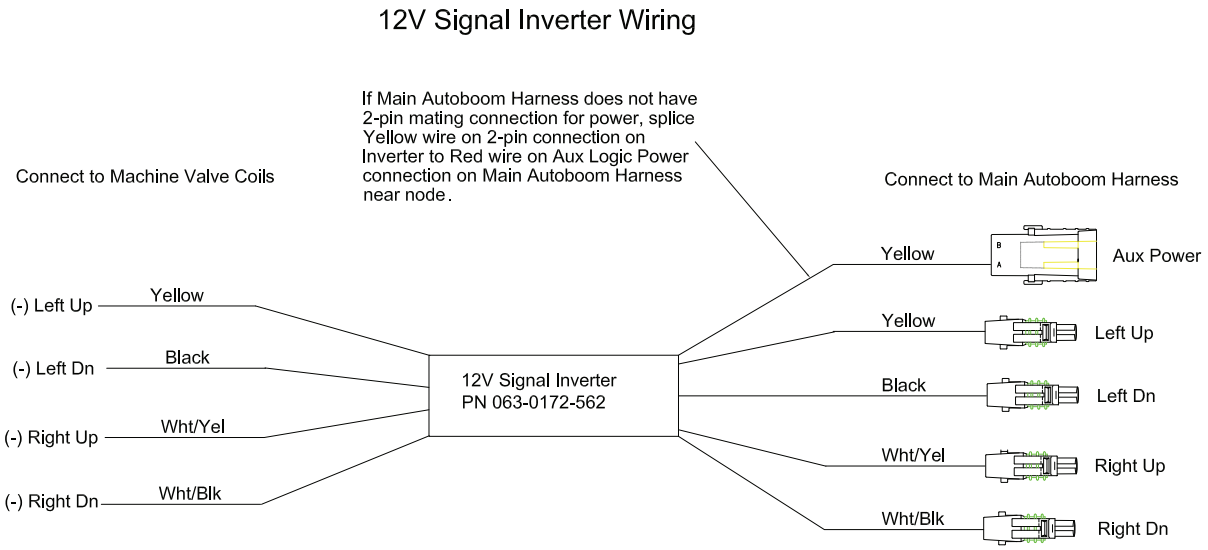
1. On the AutoBoom harness cable (P/N 115-0230-003), locate the Left Solenoid connector and connect it to Port 4A on the AutoBoom valve.
2. Connect the Right Solenoid connector to Port 4B on the AutoBoom valve.

FIGURE 8. Machine's Boom Function Coils



3. Locate the machine's boom function coils on the machine's hydraulic valve.
4. Remove the screw and din connector from the left tilt up coil.
5. Unscrew the wire retaining seal connector where the wire enters the din connector.
6. Pry the center receptacle out of the din connector.
7. Reinstall the exposed wire din connector back onto the coil.

FIGURE 9. Signal Inverter Boom Sense Interface Diagram



8. Locate the negative (-) wire using a test light or multi-meter to detect which wire has no voltage when the left up switch is pressed in the cab.
9. Locate the yellow wire on the end of the signal inverter boom sense interface and insert it through the retaining seal connector.
10. Connect the yellow wire to the terminal.
11. Reassemble the din connector and reinstall it on the left tilt up coil.
12. Repeat steps 4 - 11 above to connect the signal inverter boom sense interface to the machine's coils as shown in the following table:

Machine's Coil	Wire Color on Signal Inverter Boom Sense Interface
Left Tilt Down	Black
Right Tilt Up	White/Yellow
Right Tilt Down	White/Black

13. Locate the single weatherpack connector with the yellow wire on the other end of the signal inverter boom sense interface and connect it to the Left Solenoid Sense Up connector on the AutoBoom harness cable.
14. Repeat step 13 above to connect the signal inverter boom sense interface to the AutoBoom harness cable as shown in the following table:

Wire Color on Signal Inverter Boom Sense Interface Connector	AutoBoom Harness Cable Connection
Black	Left Solenoid Sense Down (unlabeled)
White/Yellow	Right Solenoid Sense Up
White/Black	Right Solenoid Sense Down (unlabeled)

15. Locate the 2-pin weatherpack connector on the signal inverter boom sense interface and connect it to the 2-pin weatherpack connector on the AutoBoom harness cable.

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-003) toward the machine's cab.
2. Connect the harness cable to the controller cable (P/N 115-0230-002).
3. Tighten the connector cap to secure the connection.

Note: *Be sure to allow enough slack in the harness cable to allow for boom racking and extension. If the harness cable is not long enough, it may be necessary to connect the 12' extension cable (P/N 115-0230-008) between the harness and controller cables.*

Connect the Controller

FIGURE 10. Controller Connectors

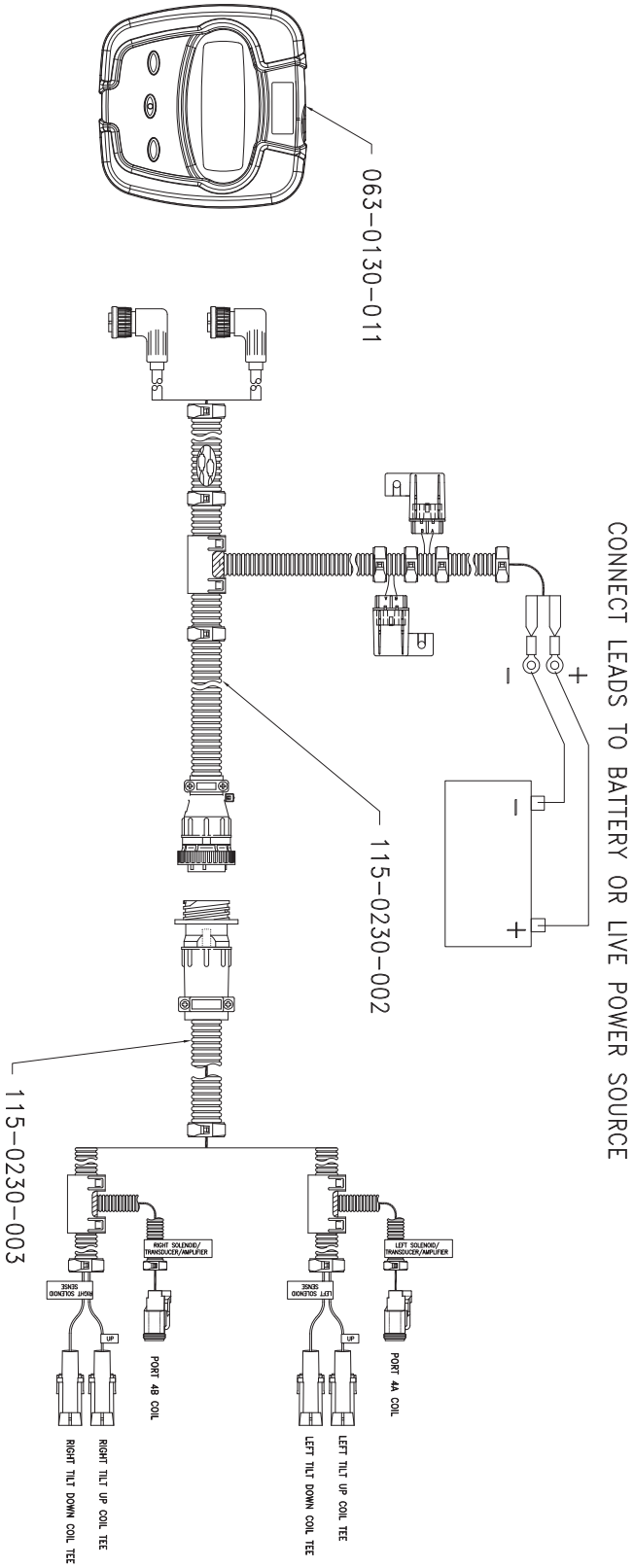
1. Route the controller cable (P/N 115-0230-002) into the right side of the machine's cab.
2. Locate the two controller connectors and connect them to the AutoBoom controller (P/N 063-0130-011).

Note: *The AutoBoom controller should be mounted in the machine's cab so that the machine's operator has easy access to it.*

Connect the Power Leads

1. Locate the power cable that has the red and white power leads at one end.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the red power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the white power lead on the negative battery terminal and reinstall the machine's battery connector.

PowerGlide Wiring Schematic



CHAPTER 4

PowerGlide Plus

PowerGlide Plus Kit Contents

This section contains a list of the components that are included in the PowerGlide Plus AutoBoom kit. Before beginning the AutoBoom installation, compare the items in the AutoBoom kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-029)

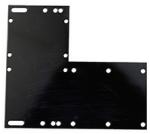
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Brandt AutoBoom Installation	016-0230-029	1
	Valve - PowerGlide Plus AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Interface - Signal Inverter Boom Sense	063-0172-562	1
	Cable - 12’ Extension	115-0230-008	1
	Splice - 16-18 Gauge Scotch Lock Parallel	405-2001-079	1

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-029)

Picture	Item Description	Part Number	Qty.
	U-bolt - 3-1/16” W x 5” L x 3/8” Thread	107-0171-607	2
	Bolt - 5/16”-18 x 7/8” Hex	311-0052-104	4
	Bolt - 3/8”-16 UNC x 1-1/4” Hex	311-0054-106	3
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	7
	Washer - 5/16” Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-029)

Picture	Item Description	Part Number	Qty.
	Fitting - 3/4” JIC M/M/F Swivel Run Tee Adapter	333-0012-039	1
	Fitting - 9/16” JIC M/M/F Swivel Run Tee Adapter	333-0012-043	2
	Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	2
	Fitting - 3/4” SAE O-Ring (M) to 3/4” JIC (M) Straight Adapter	333-0012-093	3
	Fitting - 11/16” Hex to 9/16” O-Ring Plug	333-0012-194	2

TABLE 2. Hydraulic Kit (P/N 117-0134-029)

Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - 9/16” JIC (F) to 9/16” JIC (F) - 48”	214-1000-735	2
	Hydraulic Hose - 3/4” JIC (F) to 3/4” JIC (F) 90° - 48”	214-1000-736	2
	Hydraulic Hose - 3/4” JIC (M) to 3/4” JIC (F) - 48”	214-1000-737	1

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-029)

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Right Cushioned AutoBoom	063-0131-585	1
	Axle Assembly - Left Cushioned AutoBoom	063-0131-590	1
	Bracket - Brandt 4000 Left Weldment Receiver	116-0159-547	1
	Bracket - Brandt 4000 Right Weldment Receiver	116-0159-579	1
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/16” w x 3” L x 3/8” Thread	107-0171-609	8

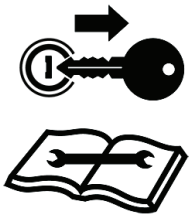
TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-029)

Picture	Item Description	Part Number	Qty.
	Bolt - 1/2”-13 x 1-1/2” SS Hex	311-0058-186	4
	Nut - 1/2”-13 Zinc Hex	312-1001-043	4
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	16

TABLE 4. PowerGlide Plus Wiring Kit (P/N 117-0137-023)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation Manual	016-0130-062	1
	Node - PowerGlide Plus AutoBoom	063-0130-010	1
	Cable - AutoBoom Harness	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1

Install the PowerGlide Plus Hydraulic System



WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.

Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly cause damage to the AutoBoom hydraulic valve.

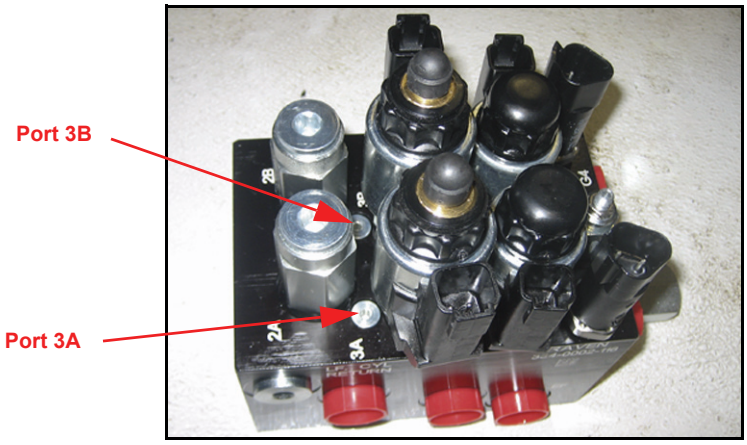
NOTICE

The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

Remove the Orifice Fittings

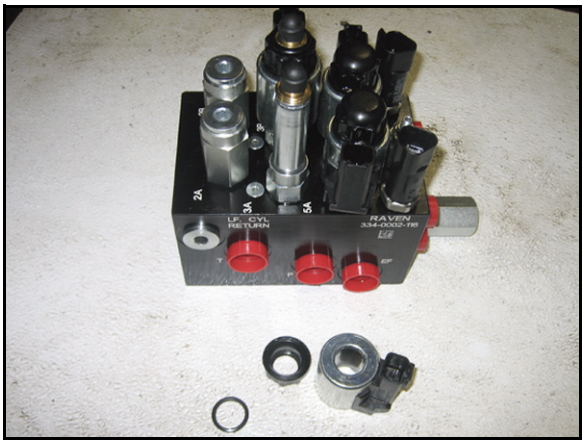
Before populating the hydraulic fittings on the AutoBoom valve, it is necessary to remove orifice fittings from the valve in the PowerGlide Plus system. Failure to remove these fittings from the valve will restrict the down speed of the booms when the system is enabled.

FIGURE 1. Port 3A and 3B Location



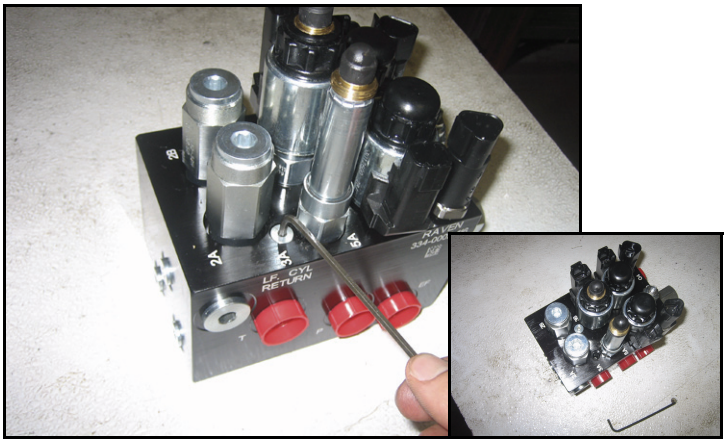
1. Locate Ports 3A and 3B on the AutoBoom valve (P/N 063-0131-126).

FIGURE 2. Coil Removed from the AutoBoom Valve



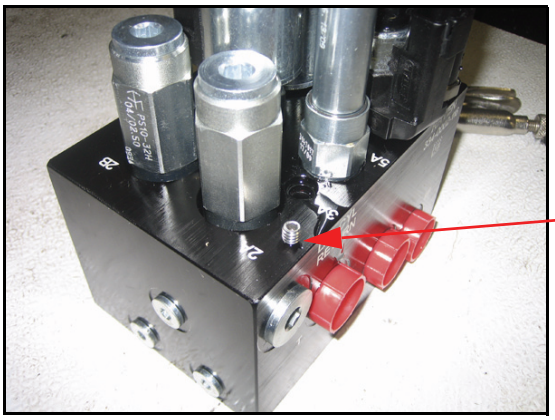
2. Remove the coils from the solenoids near Ports 3A and 3B to gain easy access to those ports.

FIGURE 3. Port Plugs Removed from the AutoBoom Valve



3. Use an Allen wrench to remove the plugs from Ports 3A and 3B.

FIGURE 4. **Orifice Fitting Removed from the AutoBoom Valve**



4. Remove the orifice fittings from Ports 3A and 3B.

Important: *Tip the AutoBoom valve on its side and use the Allen wrench to remove the orifice from the cavity, taking care not to let the fitting fall into the valve.*

FIGURE 5. **Port Plug Reinstalled on the AutoBoom Valve**

5. Use the Allen wrench to reinstall the port plugs on Ports 3A and 3B of the AutoBoom valve.

FIGURE 6. **Coil Reinstalled on the AutoBoom Valve**

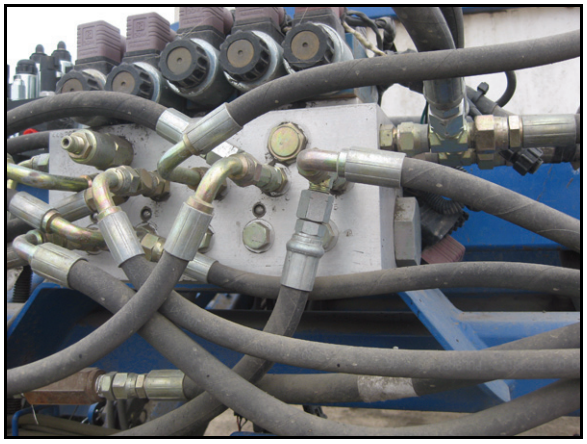
6. Reinstall the coils on the solenoids of the AutoBoom valve.

Convert the Sprayer's Hydraulic Valve to Open Center (If Applicable)

The machine's main hydraulic valve may be configured as a "closed center" system. If so, it will have to be converted to an "open center" configuration. Complete the following steps to convert the machine's hydraulic system from a "closed center" to "open center" system.

Note: *Refer to the sprayer's operator's manual for instructions on how to convert the valve to an open center configuration. Obtain an open center solenoid from the dealer from whom the machine was purchased.*

FIGURE 7. Open Center Hydraulic Valve



1. Locate the master open center coil port on the machine's hydraulic valve.
2. Remove the cavity plug installed in the open center coil port.
3. Install the master open center coil in the machine's hydraulic valve.

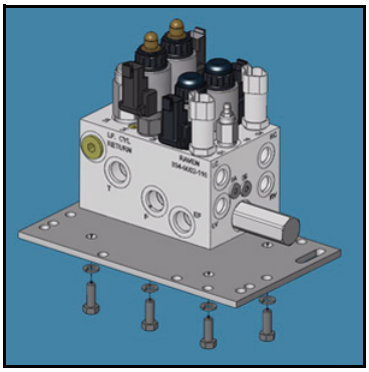
Install Fittings on the AutoBoom Valve

Before mounting the AutoBoom valve on the machine, install the proper fittings on the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure. Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 3/4" SAE O-Ring (M) to 3/4" JIC (M) Straight Adapter	333-0012-093	P, T, EF
Fitting - 11/16" Hex to 9/16" O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

FIGURE 8. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-126) to the mounting plate (P/N 107-0171-802) using four 5/16” hex bolts (P/N 311-0052-104) and four 5/16” lock washers (P/N 313-1000-019).

FIGURE 9. AutoBoom Valve Mounting on the Machine

2. Mount the AutoBoom valve to the machine’s center rack using two 3-1/16” W x 5” L x 3/8” thread U-bolts (P/N 107-0171-607) and four 3/8” zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses

⚠ WARNING

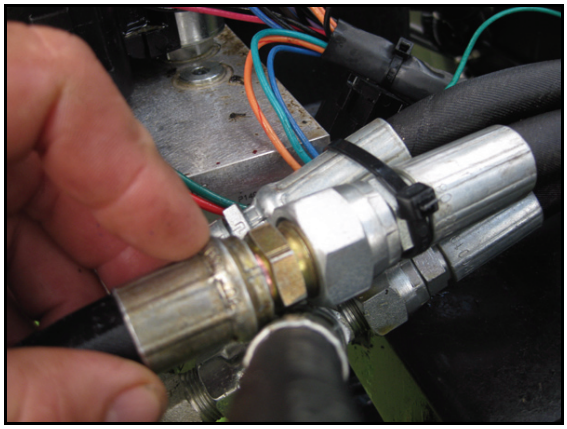
Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging the hydraulic hoses, be aware that the hydraulic fluid within the machine may be extremely hot and under high pressure.

CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material or contaminants from being introduced into the machine's hydraulic system.

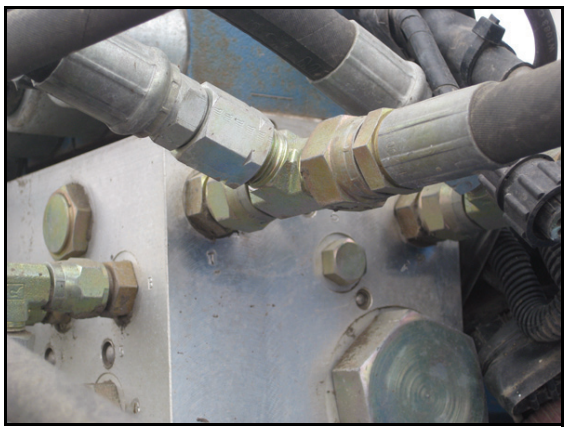
Objects or materials that are able to bypass the machine's hydraulic filtration system may adversely reduce performance and possibly damage the AutoBoom hydraulic valve.

FIGURE 10. Extension Hose Installed on the Machine's Pressure Hose



1. Disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the male end of the supplied hydraulic hose (P/N 214-1000-737) on the machine's pressure hose.
3. Connect the 90° end of the installed hydraulic hose to Port P of the AutoBoom valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) in the open pressure port of the machine's hydraulic valve.
5. Connect the 90° end of the installed hydraulic hose to Port EF of the AutoBoom valve.

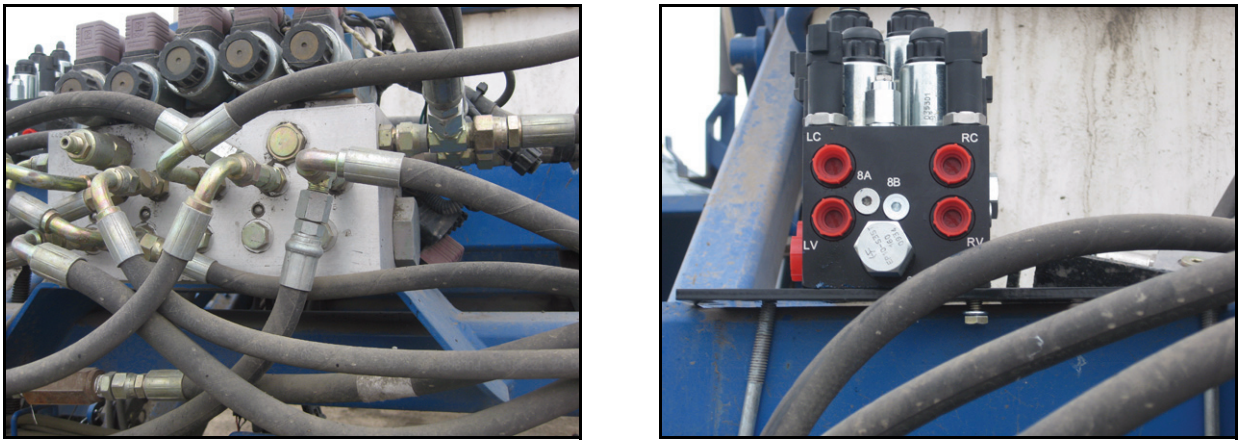
FIGURE 11. Tank Hose Installed



6. Disconnect the tank hose from the machine's hydraulic valve.
7. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) on the tank port of the machine's hydraulic valve.
8. Connect the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) on the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 12. Cylinder Hoses Installed



1. Disconnect the machine's left raise hose from the machine's hydraulic valve.

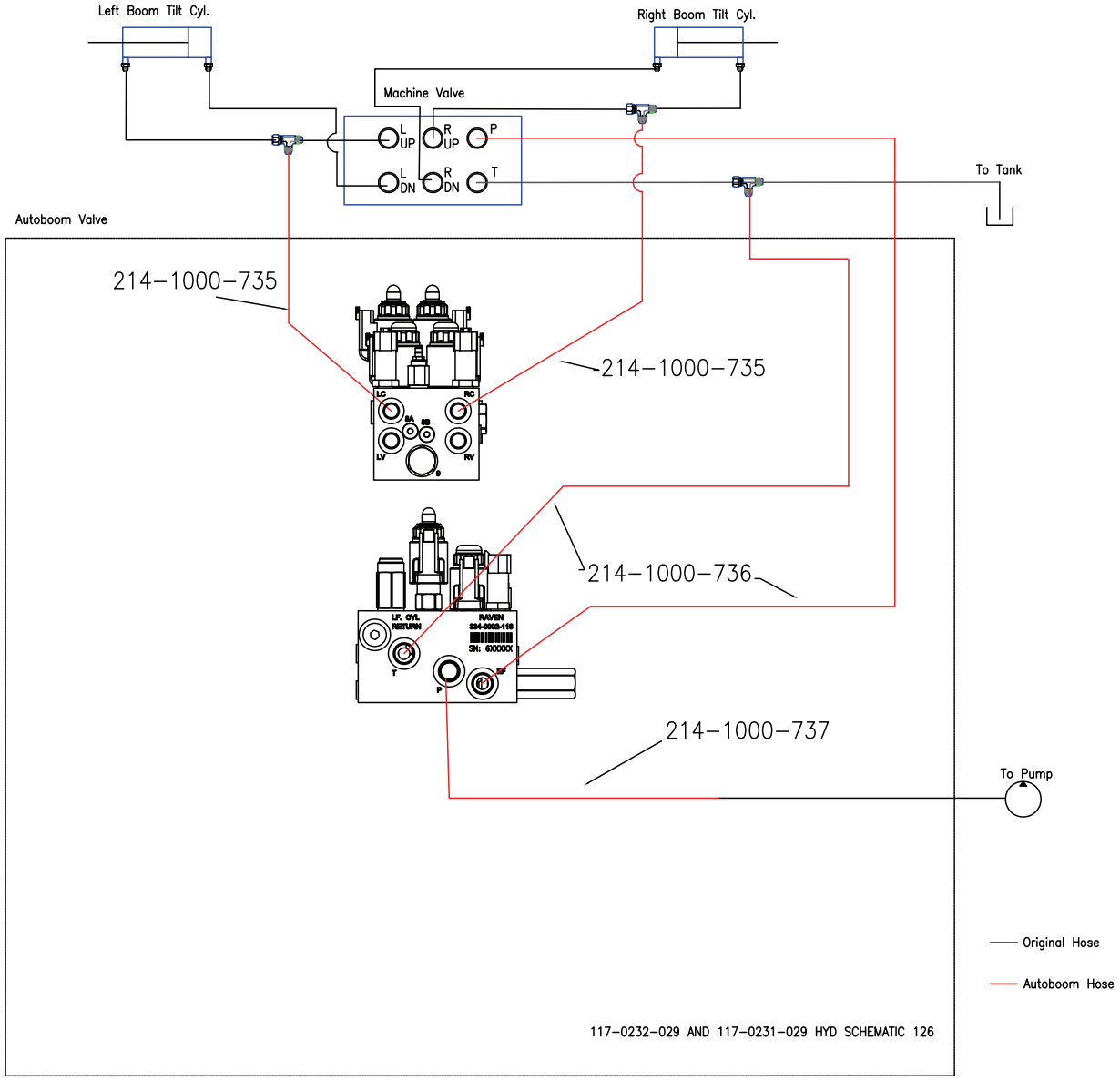
Note: *The left raise hose is the second hose from the right side of the machine's hydraulic valve.*

2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) on the open port of the machine's hydraulic valve.
3. Connect the machine's left raise hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-735) to the 90° end of the installed tee fitting.
5. Connect the 90° end of the installed hydraulic hose to Port LC of the AutoBoom valve.
6. Disconnect the machine's right raise hose from the machine's hydraulic valve.

Note: *The right raise hose is the first hose from the right side of the machine's hydraulic valve.*

7. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open port of the machine's hydraulic valve.
8. Connect the machine's right raise hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (p/N 214-1000-735) to the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port RC of the AutoBoom valve.

Hydraulic Schematic

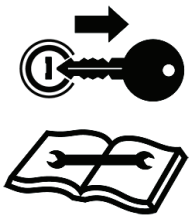


Install the Gauge Wheels

Gauge Wheel Mounting Locations

Wheel mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the wheels on the boom, ensuring the wheels will not interfere with or be damaged while folding or unfolding the booms.

Mount the Gauge Wheels



WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

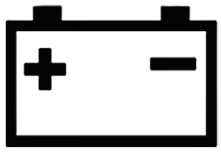
Note: *The appearance of the wheel axles may vary, depending on the type of wheel axle kit that was ordered with the AutoBoom system.*

FIGURE 13. **Gauge Wheel Installed**

1. Remove the lug nuts from the left wheel axle (P/N 063-0131-590).
2. Place the wheel (P/N 322-0131-008) on the left wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617)over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
5. Secure the left wheel mounting bracket (P/N 116-0159-547) to the front of the left boom using four 2-1/16” W x 3” L x 3/8” thread U-bolts (P/N 107-0171-609) and eight 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the left wheel axle into the left wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket using two 1/2”-13 x 1-1/2” SS hex bolts (P/N 311-0058-186) and two 1/2” zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the right wheel.

Install the PowerGlide Plus Wiring

Wiring Connections



CAUTION

Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.

Note: *For wiring connections made outside the cab, apply dielectric silicone grease (P/N 222-0000-006) generously on both the male and female ends of the connectors. Application of the grease will prevent corrosion to the pins and wires.*

Install the AutoBoom Node

FIGURE 14. AutoBoom Node Installed

1. Mount the AutoBoom node (P/N 063-0130-010) to the hydraulic block mounting plate (P/N 107-0171-802) using three 3/8”-16 zinc hex bolts (P/N 311-0054-106) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: *Position the node so that the cable connectors face down or to the side.*

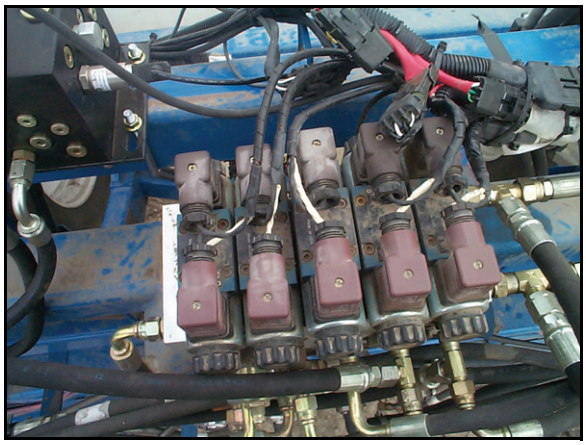
2. Insert the large, rectangular node connectors on the harness cable (P/N 115-0230-045) into the correct ports of the AutoBoom valve.
3. Tighten the bolts on the node connectors to secure the connections.

Connect the Harness Cable to the Boom Function Controls

1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-045).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-126).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.

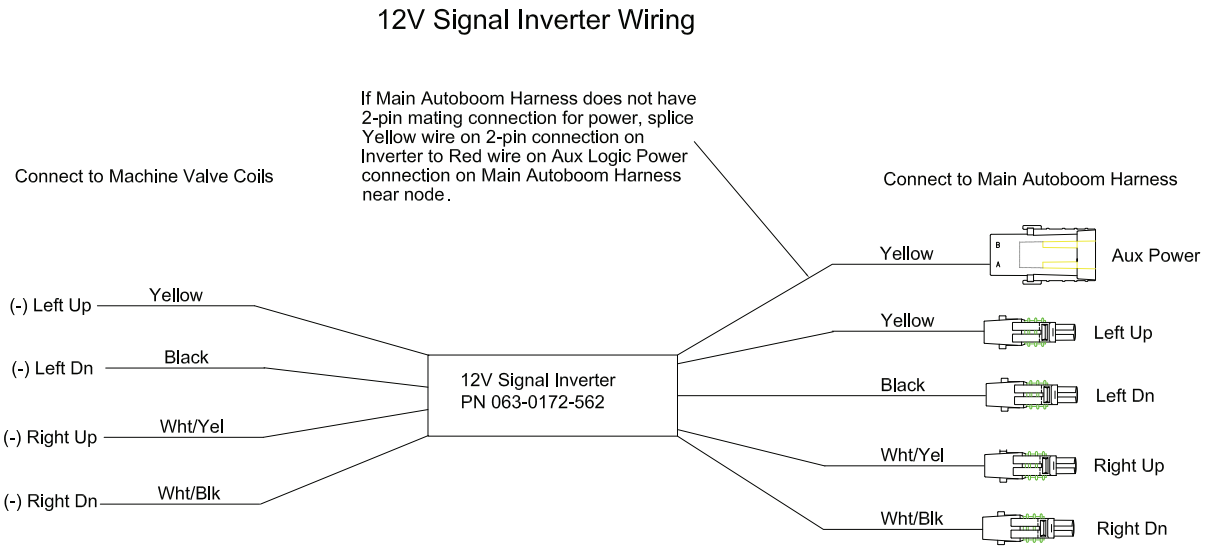
5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.
6. Connect the Left Solenoid connector to Port 4A on the AutoBoom valve.
7. Connect the Right Solenoid connector to port 4B on the AutoBoom valve.
8. Locate the Left Prop and Right Prop connectors on the harness cable.
9. Connect the Left Prop connector to Port 5A on the AutoBoom valve.
10. Connect the Right Prop connector to Port 13A on the AutoBoom valve.

FIGURE 15. Machine's Boom Function Coils



11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Remove the screw and din connector from the left tilt up coil.
13. Unscrew the wire retaining seal connector where the wire enters the din connector.
14. Pry the center receptacle out of the din connector.
15. Reinstall the exposed wire din connector back onto the coil.

FIGURE 16. Signal Inverter Boom Sense Interface Diagram



16. Locate the negative (-) wire using a test light or multi-meter to detect which wire has no voltage when the left up switch is pressed in the cab.

17. Locate the yellow wire on the end of the signal inverter boom sense interface and insert it through the retaining seal connector.
18. Connect the yellow wire to the terminal.
19. Reassemble the din connector and reinstall it on the left tilt up coil.
20. Repeat steps 12 - 19 above to connect the signal inverter boom sense interface to the machine's coils as shown in the following table:

Machine's Coil	Wire Color on Signal Inverter Boom Sense Interface
Left Tilt Down	Black
Right Tilt Up	White/Yellow
Right Tilt Down	White/Black

21. Locate the single weatherpack connector with the yellow wire on the other end of the signal inverter boom sense interface and connect it to the Left Solenoid Sense Up connector on the AutoBoom harness cable.
22. Repeat step 21 above to connect the signal inverter boom sense interface to the AutoBoom harness cable as shown in the following table:

Wire Color on Signal Inverter Boom Sense Interface Connector	AutoBoom Harness Cable Connection
Black	Left Solenoid Sense Down (unlabeled)
White/Yellow	Right Solenoid Sense Up
White/Black	Right Solenoid Sense Down (unlabeled)

23. Locate the 2-pin weatherpack connector on the signal inverter boom sense interface.
24. Cut the weatherpack connector off the end of the wire.
25. Locate the Aux Logic Power connector on the AutoBoom harness cable.
26. Use a 16-18 gauge scotch lock parallel splice connector (P/N 405-2001-079) to connect the yellow wire of the signal inverter boom sense interface to the red wire on the AutoBoom harness cable from which the weatherpack connector was removed.

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-045) toward the machine's cab.
2. Connect the harness cable to the controller cable (P/N 115-0230-007).
3. Tighten the connector cap to secure the connection.

Note: *Be sure to allow enough slack in the harness cable to allow for boom racking and extension. If the harness cable is not long enough, it may be necessary to connect the 12' extension cable (p/N 115-0230-008) between the harness and controller cables.*

Connect the Controller (If Applicable)

1. Route the controller cable (P/N 115-0230-007) into the right side of the machine's cab.

2. Locate the two controller connectors and connect them to the AutoBoom controller (P/N 063-0130-021).

Note: *The AutoBoom controller should be mounted in the machine's cab so that the machine's operator has easy access to it. If the harness cable is not long enough, it may be necessary to connect the 12' extension cable (P/N 115-0230-008) between the harness and controller cables.*

Connect the Field Computer (If Applicable)

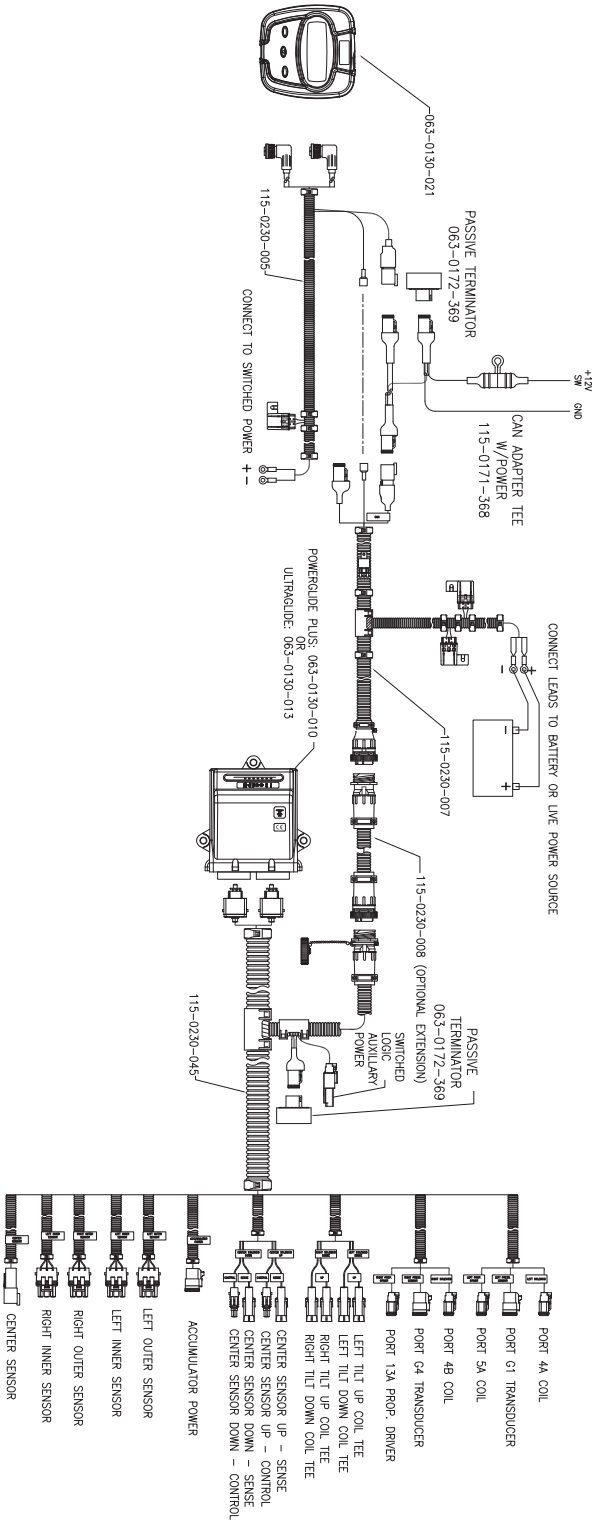
Refer to the Installation & Operation Manual and the appropriate wiring schematic beginning on page 38 for installation and wiring instructions for the specific field computer being used.

Connect the Power Leads

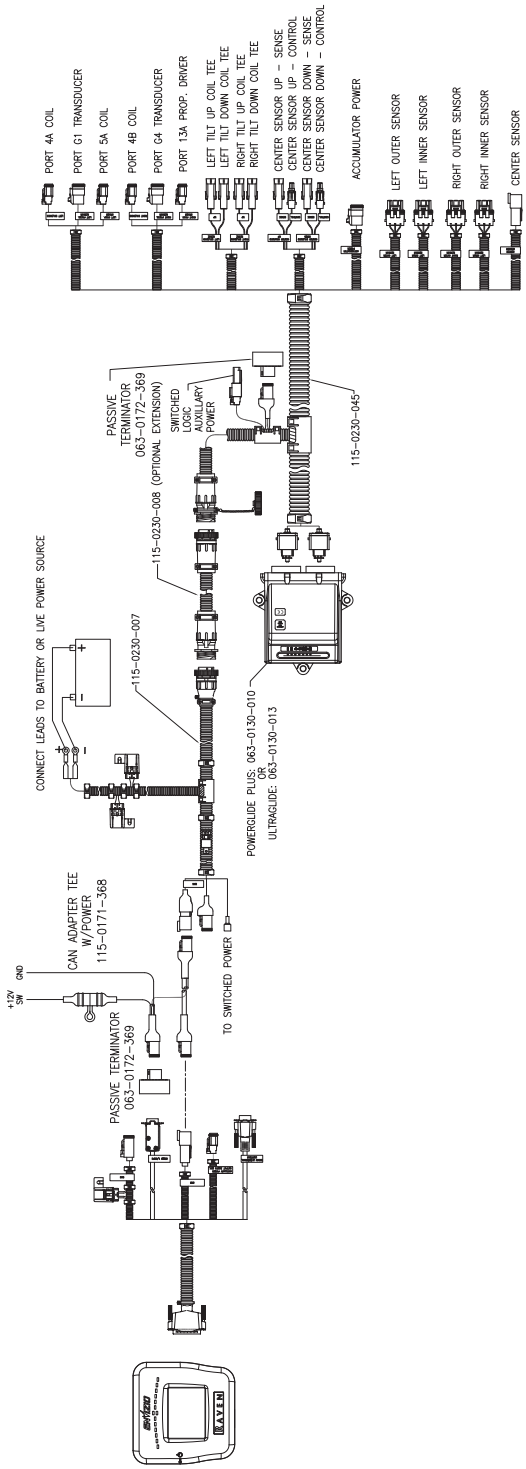
1. Locate the power cable that has the red and white power leads at one end.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the red power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the white power lead on the negative battery terminal and reinstall the machine's battery connector.

PowerGlide Plus Wiring Schematics

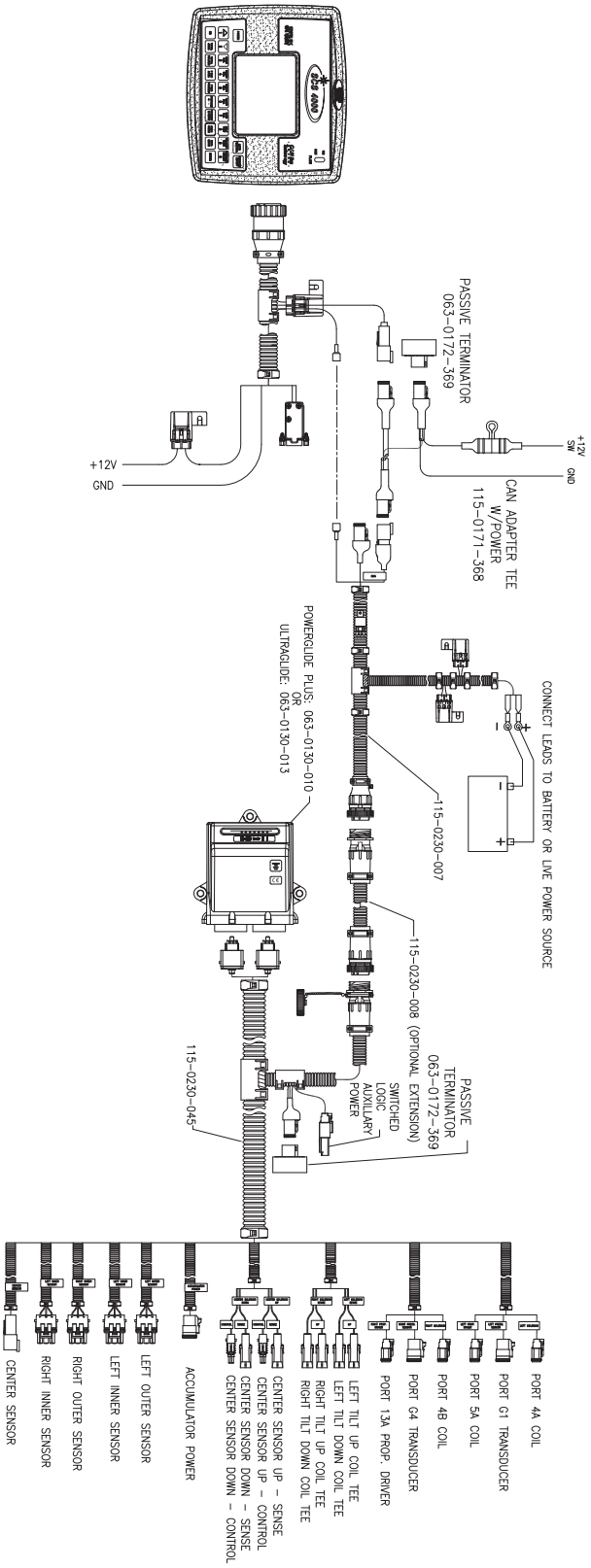
AutoBoom Controller



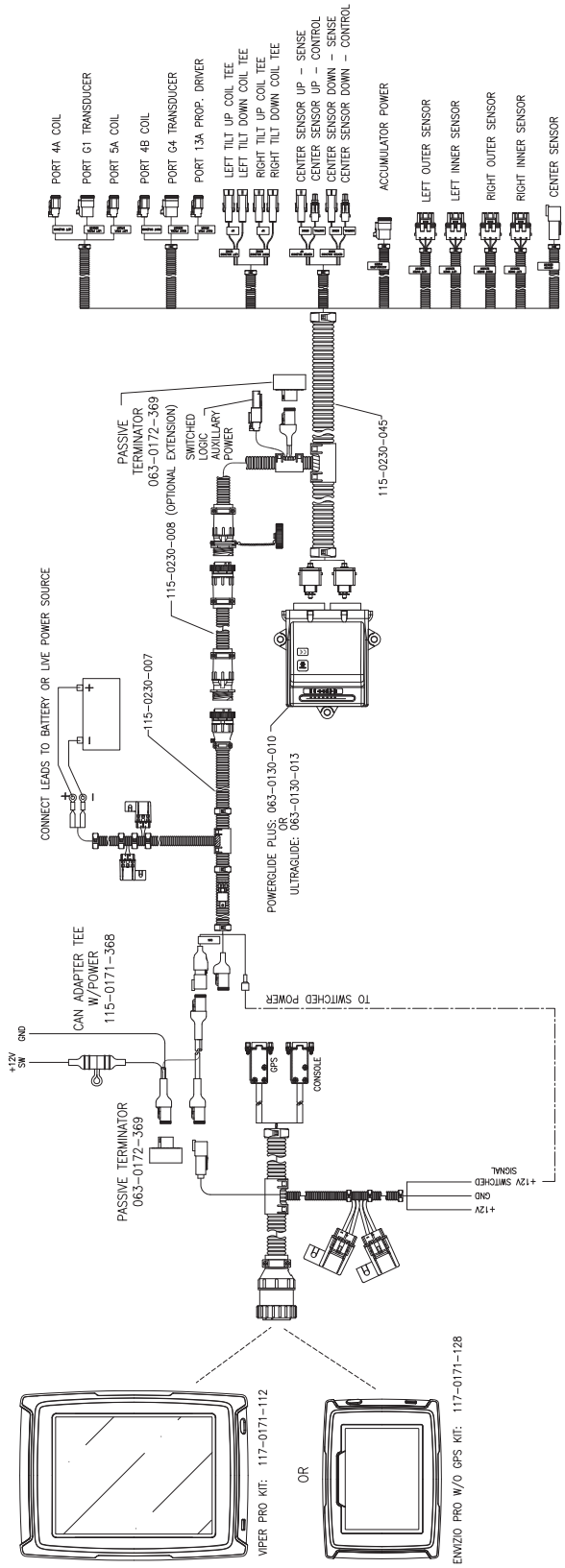
Envizio Plus



SCS 4000/5000



Viper Pro & Envizio Pro



CHAPTER 5

UltraGlide

UltraGlide Kit Contents

This section contains a list of the components that are included in the UltraGlide AutoBoom kit. Before beginning the AutoBoom installation, compare the items in the AutoBoom kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-029)

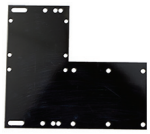
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Brandt AutoBoom Installation	016-0230-029	1
	Valve - PowerGlide Plus AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Center Ultrasonic	063-0130-018	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-029)

Picture	Item Description	Part Number	Qty.
	Bracket - Ultrasonic Sensor	116-0159-684	1
	Interface - Signal Inverter Boom Sense	063-0172-562	1
	Cable - 12’ Extension	115-0230-008	1
	Splice - 16-18 Gauge Scotch Lock Parallel	405-2001-079	1
	U-Bolt - 4” W x 5” L x 3/8” Thread	107-0171-606	2
	U-bolt - 3-1/16” W x 5” L x 3/8” Thread	107-0171-607	2
	U-Bolt - 2-1/8” W x 2” L x 3/8” Thread	107-0171-610	4
	Bolt - 5/16”-18 x 7/8” Hex	311-0052-104	4
	Bolt - 3/8”-16 UNC x 1-1/4” Hex	311-0054-106	7
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	23
	Washer - 5/16” Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-029)

Picture	Item Description	Part Number	Qty.
	Fitting - 3/4” JIC M/M/F Swivel Run Tee Adapter	333-0012-039	1
	Fitting - 9/16” JIC M/M/F Swivel Run Tee Adapter	333-0012-043	2
	Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	2
	Fitting - 3/4” SAE O-Ring (M) to 3/4” JIC (M) Straight Adapter	333-0012-093	3
	Fitting - 11/16” Hex to 9/16” O-Ring Plug	333-0012-194	2
	Hydraulic Hose - 9/16” JIC (F) to 9/16” JIC (F) - 48”	214-1000-735	2
	Hydraulic Hose - 3/4” JIC (F) to 3/4” JIC (F) 90° - 48”	214-1000-736	2
	Hydraulic Hose - 3/4” JIC (M) to 3/4” JIC (F) - 48”	214-1000-737	1

TABLE 3. Optional Wheel Kit (P/N 117-0133-029)

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Right Cushioned AutoBoom	063-0131-585	1
	Axle Assembly - Left Cushioned AutoBoom	063-0131-590	1

TABLE 3. Optional Wheel Kit (P/N 117-0133-029)

Picture	Item Description	Part Number	Qty.
	Bracket - Brandt 4000 Left Weldment Receiver	116-0159-547	1
	Bracket - Brandt 4000 Right Weldment Receiver	116-0159-579	1
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/16” w x 3” L x 3/8” Thread	107-0171-609	8
	Bolt - 1/2”-13 x 1-1/2” SS Hex	311-0058-186	4
	Nut - 1/2”-13 Zinc Hex	312-1001-043	4
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	16

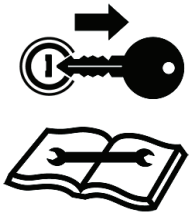
TABLE 4. UltraGlide Wiring Kit (P/N 117-0137-024)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1

TABLE 4. UltraGlide Wiring Kit (P/N 117-0137-024)

	Cable - Sensor	115-0171-527	2
	Cable - Harness	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1

Install the UltraGlide Hydraulic System



⚠ WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

⚠ CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.

Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly cause damage to the AutoBoom hydraulic valve.

NOTICE

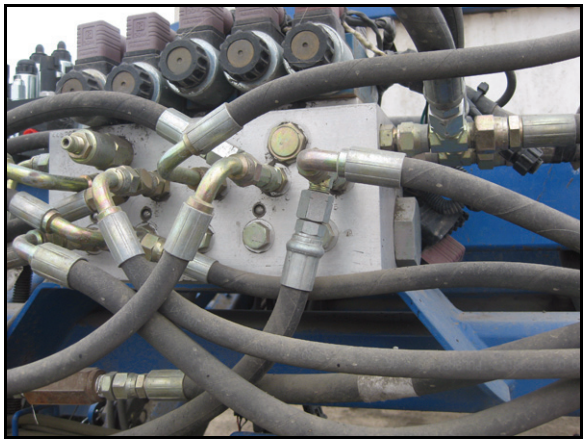
The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

Convert the Sprayer's Hydraulic Valve to Open Center (If Applicable)

The machine's main hydraulic valve may be configured as a "closed center" system. If so, it will have to be converted to an "open center" configuration. Complete the following steps to convert the machine's hydraulic system from a "closed center" to "open center" system.

Note: *Refer to the sprayer's operator's manual for instructions on how to convert the valve to an open center configuration. Obtain an open center solenoid from the dealer from whom the machine was purchased.*

FIGURE 1. Open Center Hydraulic Valve



1. Locate the master open center coil port on the machine's hydraulic valve.
2. Remove the cavity plug installed in the open center coil port.
3. Install the master open center coil in the machine's hydraulic valve.

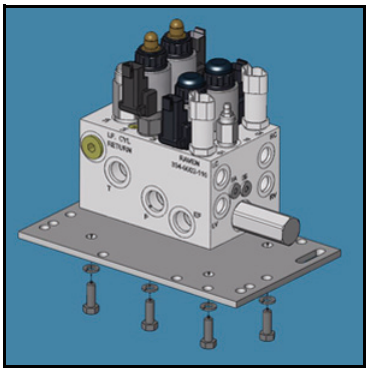
Install Fittings on the AutoBoom Valve

Before mounting the AutoBoom valve on the machine, install the proper fittings on the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure. Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 3/4" SAE O-Ring (M) to 3/4" JIC (M) Straight Adapter	333-0012-093	P, T, EF
Fitting - 11/16" Hex to 9/16" O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

FIGURE 2. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-126) to the mounting plate (P/N 107-0171-802) using four 5/16” hex bolts (P/N 311-0052-104) and four 5/16” lock washers (P/N 313-1000-019).

FIGURE 3. AutoBoom Valve Mounting on the Machine

2. Mount the AutoBoom valve to the machine’s center rack using two 3-1/16” W x 5” L x 3/8” thread U-bolts (P/N 107-0171-607) and four 3/8” zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses

⚠ WARNING

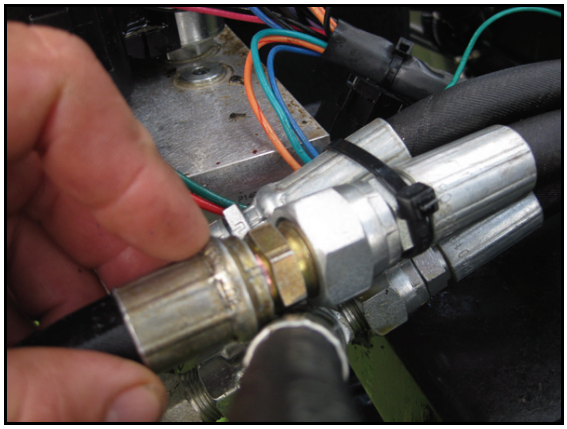
Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging the hydraulic hoses, be aware that the hydraulic fluid within the machine may be extremely hot and under high pressure.

CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material or contaminants from being introduced into the machine's hydraulic system.

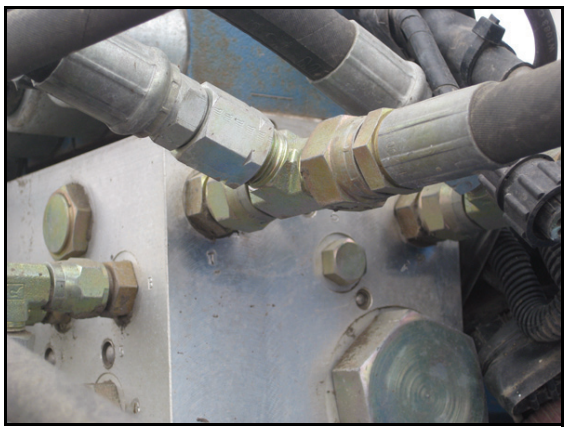
Objects or materials that are able to bypass the machine's hydraulic filtration system may adversely reduce performance and possibly damage the AutoBoom hydraulic valve.

FIGURE 4. Extension Hose Installed on the Machine's Pressure Hose



1. Disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the male end of the supplied hydraulic hose (P/N 214-1000-737) on the machine's pressure hose.
3. Connect the 90° end of the installed hydraulic hose to Port P of the AutoBoom valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) in the open pressure port of the machine's hydraulic valve.
5. Connect the 90° end of the installed hydraulic hose to Port EF of the AutoBoom valve.

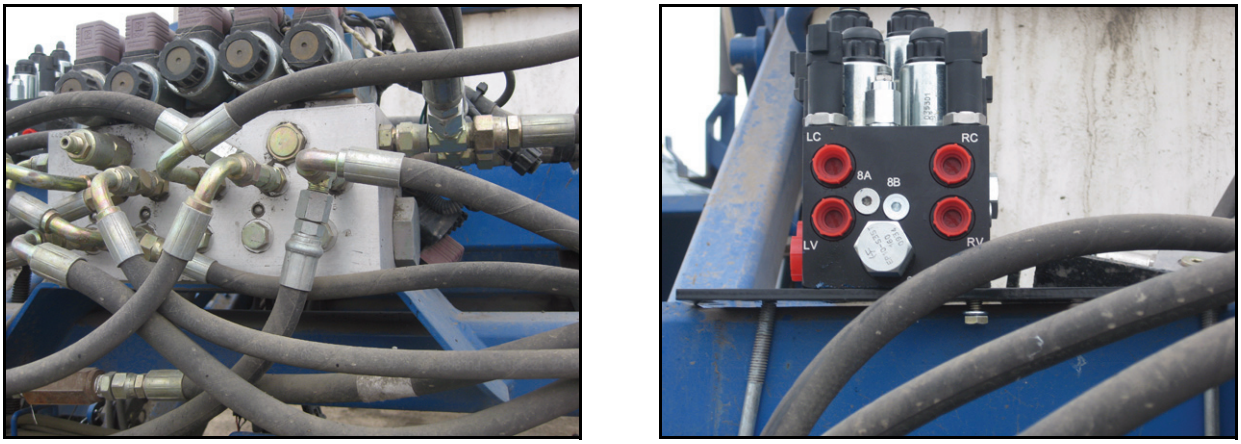
FIGURE 5. Tank Hose Installed



6. Disconnect the tank hose from the machine's hydraulic valve.
7. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) on the tank port of the machine's hydraulic valve.
8. Connect the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-736) on the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 6. Cylinder Hoses Installed



1. Disconnect the machine's left raise hose from the machine's hydraulic valve.

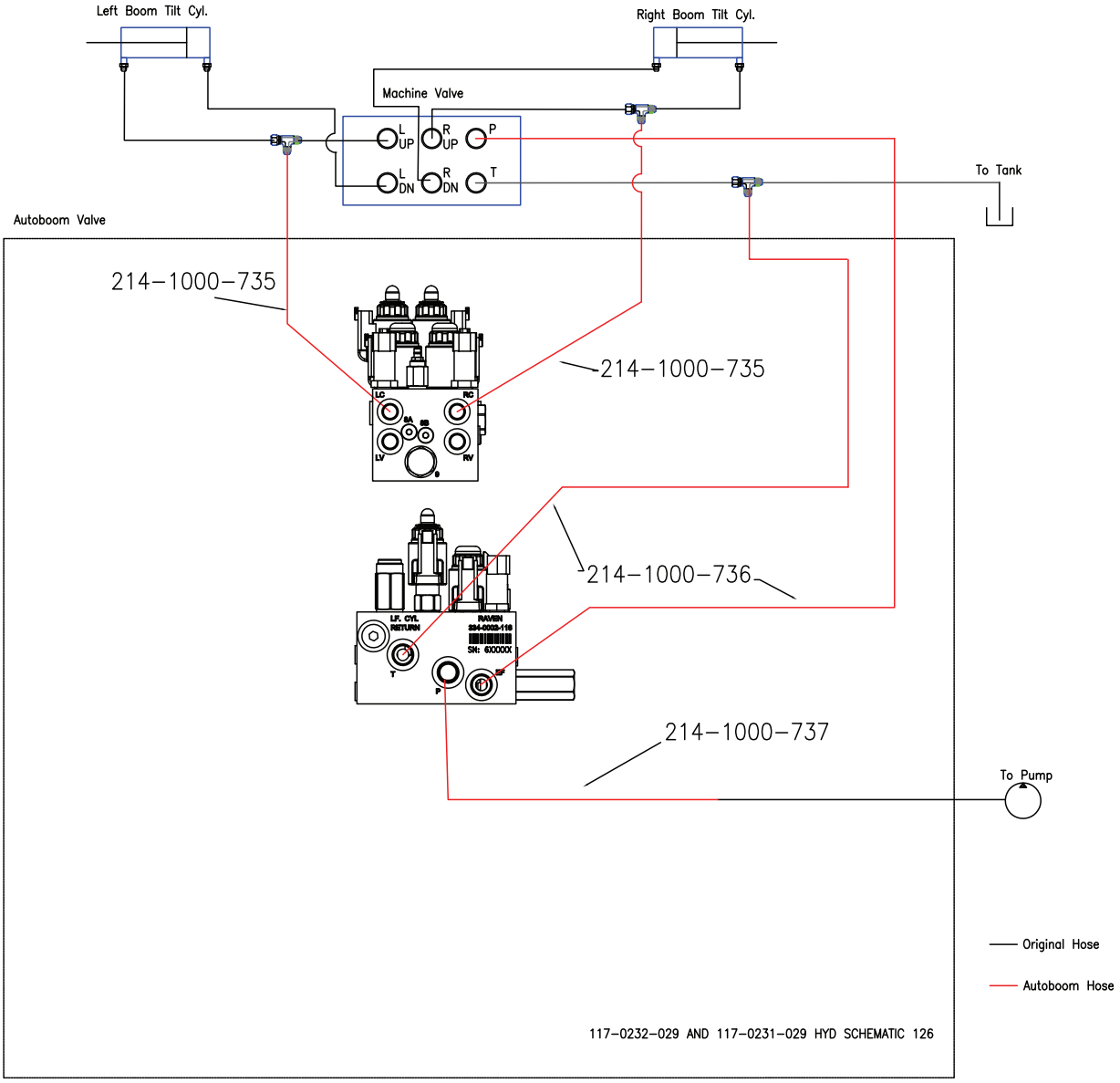
Note: *The left raise hose is the second hose from the right side of the machine's hydraulic valve.*

2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) on the open port of the machine's hydraulic valve.
3. Connect the machine's left raise hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-735) to the 90° end of the installed tee fitting.
5. Connect the 90° end of the installed hydraulic hose to Port LC of the AutoBoom valve.
6. Disconnect the machine's right raise hose from the machine's hydraulic valve.

Note: *The right raise hose is the first hose from the right side of the machine's hydraulic valve.*

7. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open port of the machine's hydraulic valve.
8. Connect the machine's right raise hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (p/N 214-1000-735) to the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to Port RC of the AutoBoom valve.

Hydraulic Schematic

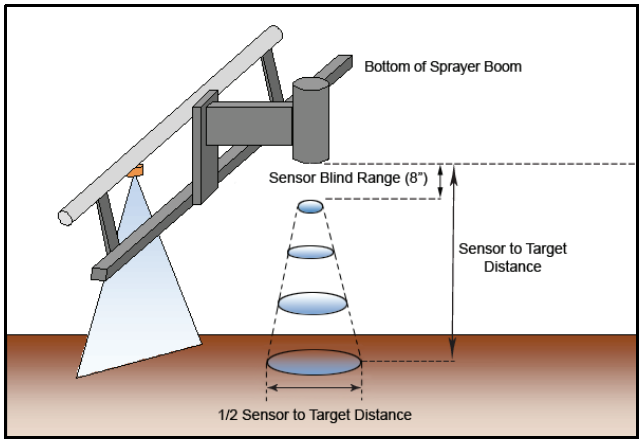


Install the UltraGlide Sensors

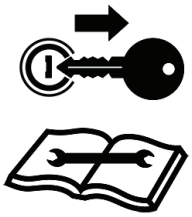
Boom Sensor Mounting Locations

Sensor mounting locations may be influenced by the boom configuration. If an object enters the sensor's blind range unexpectedly, a false echo return to the sensor could occur, causing the boom to drop and the sensor or boom to be damaged. To ensure optimal operation of the UltraGlide system and to protect the sprayer boom, the sensors should be mounted on the front side of the boom, 8 - 10" above the lowest hanging part of the boom.

FIGURE 7. Illustration of Sensor's Blind Range



Mount the Boom Sensors



WARNING

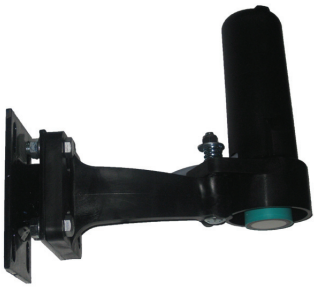
The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

FIGURE 8. Mounted Boom Sensor

1. Mount the left sensor (P/N 063-0130-014) to the front of the left boom using two 2-1/8” W x 2” L x 3/8” thread U-bolts (P/N 107-0171-610) and four 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Tighten the nuts to ensure the sensor is mounted securely.
3. Repeat the steps above to mount the remaining boom sensor(s).

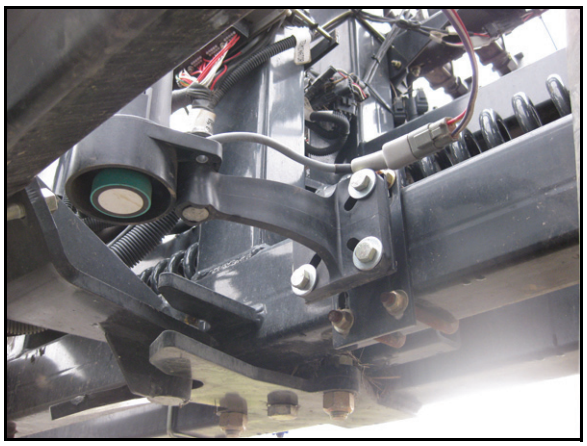
Mount the Center Rack Sensor

FIGURE 9. Center Sensor Mounted to Bracket



1. Secure the center sensor (P/N 063-0130-018) to the ultrasonic sensor bracket (P/N 116-0159-684) using four 3/8”-16 UNC x 1-1/4” hex bolts (P/N 311-0054-106) and four 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

FIGURE 10. Mounted Center Sensor



2. Mount the center sensor inside the machine’s center rack (toward the machine) using two 4” W x 5” L x 3/8” thread U-bolts (P/N 107-0171-606) and four 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
3. Tighten the nuts to ensure the sensor is mounted securely.

Connect the Sensor Cables

1. Connect the left sensor cable (P/N 115-0171-527) to the connector on the left sensor.
2. Route the left sensor cable toward the AutoBoom valve.
3. Loop and tie-off any excess cable, allowing enough excess cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor cable(s).

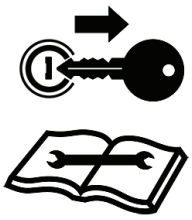
Note: *The sensor cables will be connected to the AutoBoom system in the wiring phase of installation.*

Install the Gauge Wheels - Optional

Gauge Wheel Mounting Locations

Wheel mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the wheels on the boom, ensuring the wheels will not interfere with or be damaged while folding or unfolding the booms.

Mount the Gauge Wheels



⚠ WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

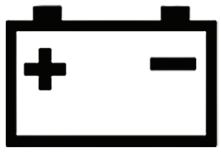
Note: *The appearance of the wheel axles may vary, depending on the type of wheel axle kit that was ordered with the AutoBoom system.*

FIGURE 11. Gauge Wheel Installed

1. Remove the lug nuts from the left wheel axle (P/N 063-0131-590).
2. Place the wheel (P/N 322-0131-008) on the left wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617)over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
5. Secure the left wheel mounting bracket (P/N 116-0159-547) to the front of the left boom using four 2-1/16” W x 3” L x 3/8” thread U-bolts (P/N 107-0171-609) and eight 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the left wheel axle into the left wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket using two 1/2”-13 x 1-1/2” SS hex bolts (P/N 311-0058-186) and two 1/2” zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the right wheel.

Install the UltraGlide Wiring

Wiring Connections



⚠ CAUTION

Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.

Note: *For wiring connections made outside the cab, apply dielectric silicone grease (P/N 222-0000-006) generously on both the male and female ends of the connectors. Application of the grease will prevent corrosion to the pins and wires.*

Install the AutoBoom Node

FIGURE 12. **AutoBoom Node Installed**

1. Mount the AutoBoom node (P/N 063-0130-013) to the hydraulic block mounting plate (P/N 107-0171-802) using three 3/8”-16 zinc hex bolts (P/N 311-0054-106) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: *Position the node so that the cable connectors face down or to the side.*

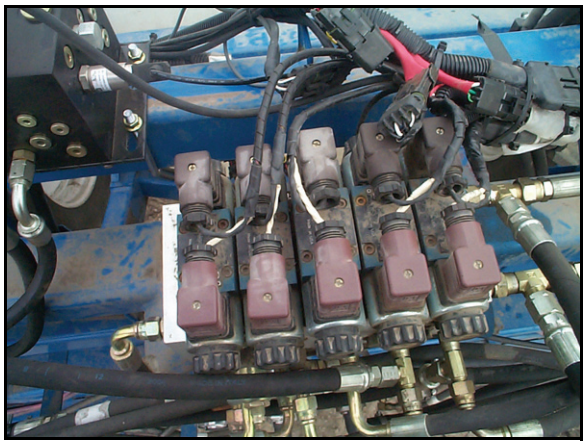
2. Insert the large, rectangular node connectors on the harness cable (P/N 115-0230-045) into the correct ports of the AutoBoom valve.
3. Tighten the bolts on the node connectors to secure the connections.

Connect the Harness Cable to the Boom Function Controls

1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-045).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-126).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.

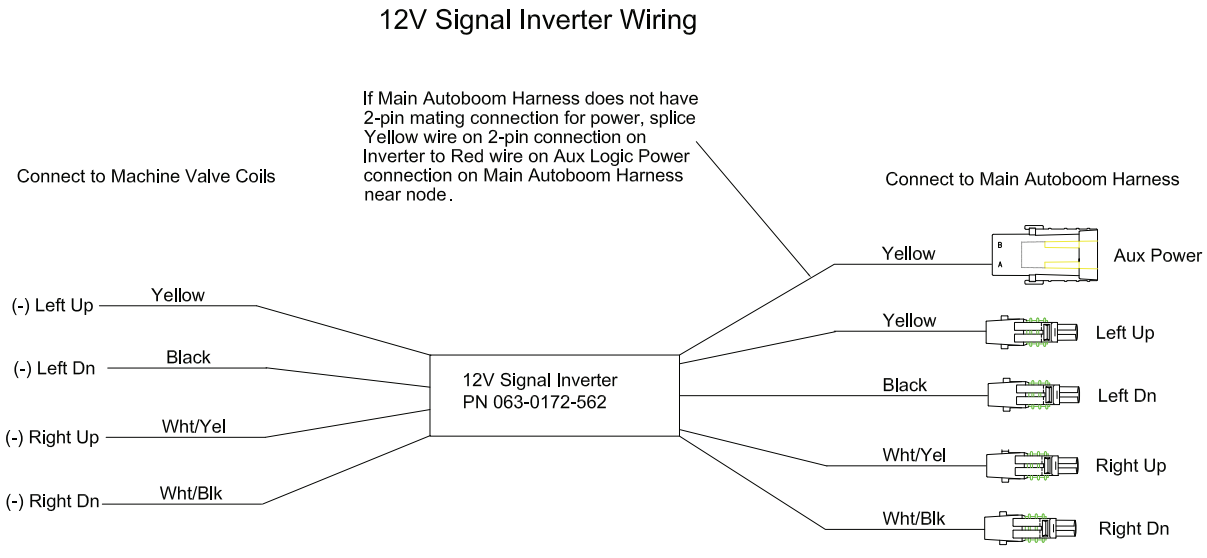
5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.
6. Connect the Left Solenoid connector to Port 4A on the AutoBoom valve.
7. Connect the Right Solenoid connector to port 4B on the AutoBoom valve.
8. Locate the Left Prop and Right Prop connectors on the harness cable.
9. Connect the Left Prop connector to Port 5A on the AutoBoom valve.
10. Connect the Right Prop connector to Port 13A on the AutoBoom valve.

FIGURE 13. Machine's Boom Function Coils



11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Remove the screw and din connector from the left tilt up coil.
13. Unscrew the wire retaining seal connector where the wire enters the din connector.
14. Pry the center receptacle out of the din connector.
15. Reinstall the exposed wire din connector back onto the coil.

FIGURE 14. Signal Inverter Boom Sense Interface Diagram



16. Locate the negative (-) wire using a test light or multi-meter to detect which wire has no voltage when the left up switch is pressed in the cab.

17. Locate the yellow wire on the end of the signal inverter boom sense interface and insert it through the retaining seal connector.
18. Connect the yellow wire to the terminal.
19. Reassemble the din connector and reinstall it on the left tilt up coil.
20. Repeat steps 12 - 19 above to connect the signal inverter boom sense interface to the machine's coils as shown in the following table:

Machine's Coil	Wire Color on Signal Inverter Boom Sense Interface
Left Tilt Down	Black
Right Tilt Up	White/Yellow
Right Tilt Down	White/Black

21. Locate the single weatherpack connector with the yellow wire on the other end of the signal inverter boom sense interface and connect it to the Left Solenoid Sense Up connector on the AutoBoom harness cable.
22. Repeat step 21 above to connect the signal inverter boom sense interface to the AutoBoom harness cable as shown in the following table:

Wire Color on Signal Inverter Boom Sense Interface Connector	AutoBoom Harness Cable Connection
Black	Left Solenoid Sense Down (unlabeled)
White/Yellow	Right Solenoid Sense Up
White/Black	Right Solenoid Sense Down (unlabeled)

23. Locate the 2-pin weatherpack connector on the signal inverter boom sense interface.
24. Cut the weatherpack connector off the end of the wire.
25. Locate the Aux Logic Power connector on the AutoBoom harness cable.
26. Use a 16-18 gauge scotch lock parallel splice connector (P/N 405-2001-079) to connect the yellow wire of the signal inverter boom sense interface to the red wire on the AutoBoom harness cable from which the weatherpack connector was removed.

Connect the Harness Cable to the Sensors

1. Locate the Center Sensor connector on the AutoBoom harness cable.
2. Connect the Center Sensor connector to the installed center sensor (P/N 063-0130-018).
3. Locate the Left Outer Sensor connector on the AutoBoom harness cable.
4. Connect the Left Outer Sensor connector to the installed left sensor cable (P/N 115-0171-527).
5. Locate the Right Outer Sensor connector on the AutoBoom harness cable.
6. Connect the Right Outer Sensor connector to the installed right sensor cable.
7. If optional inner boom sensors are installed, repeat the steps above to connect the inner sensors.

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-045) toward the machine's cab.
2. Connect the harness cable to the controller cable (P/N 115-0230-007).
3. Tighten the connector cap to secure the connection.

Note: *Be sure to allow enough slack in the harness cable to allow for boom racking and extension. If the harness cable is not long enough, it may be necessary to connect the 12' extension cable (p/N 115-0230-008) between the harness and controller cables.*

Connect the Controller (If Applicable)

1. Route the controller cable (P/N 115-0230-007) into the right side of the machine's cab.
2. Locate the two controller connectors and connect them to the AutoBoom controller (P/N 063-0130-021).

Note: *The AutoBoom controller should be mounted in the machine's cab so that the machine's operator has easy access to it. If the harness cable is not long enough, it may be necessary to connect the 12' extension cable (P/N 115-0230-008) between the harness and controller cables.*

Connect the Field Computer (If Applicable)

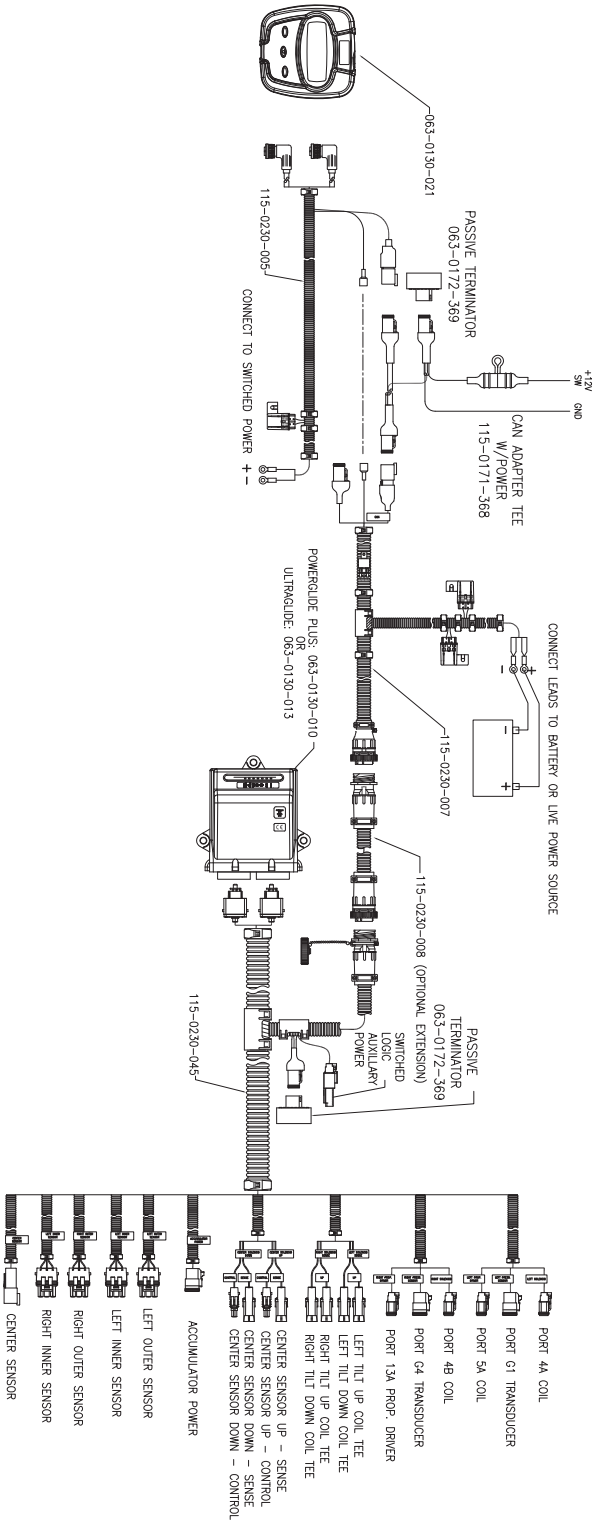
Refer to the Installation & Operation Manual and the appropriate wiring schematic beginning on page 60 for installation and wiring instructions for the specific field computer being used.

Connect the Power Leads

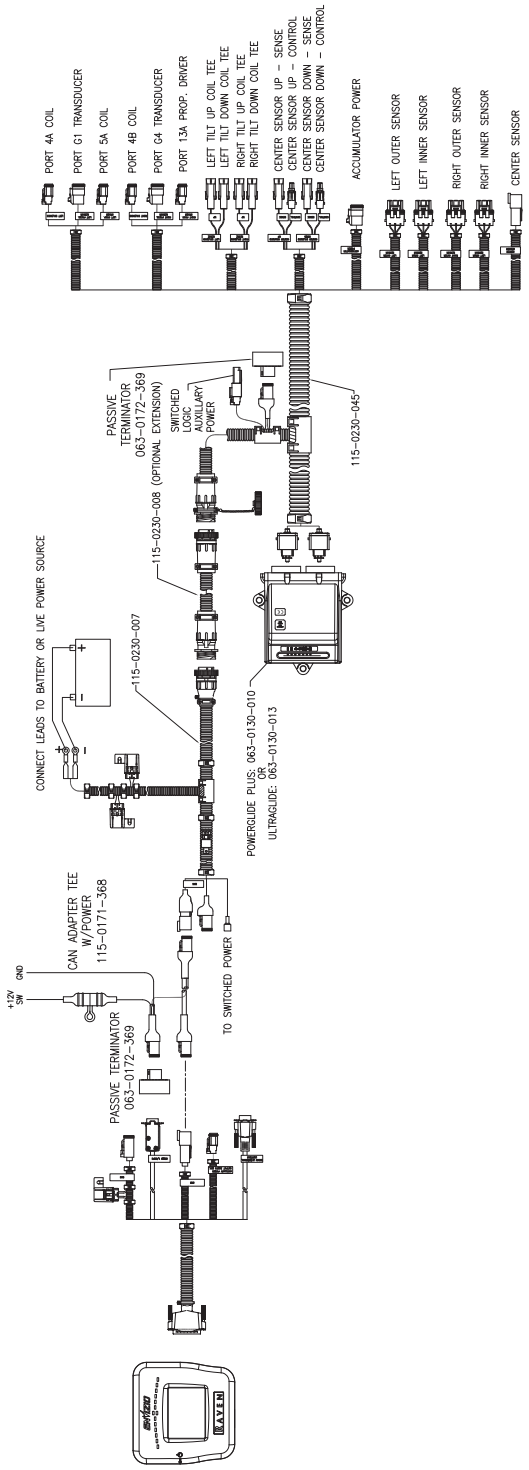
1. Locate the power cable that has the red and white power leads at one end.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the red power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the white power lead on the negative battery terminal and reinstall the machine's battery connector.

UltraGlide Wiring Schematics

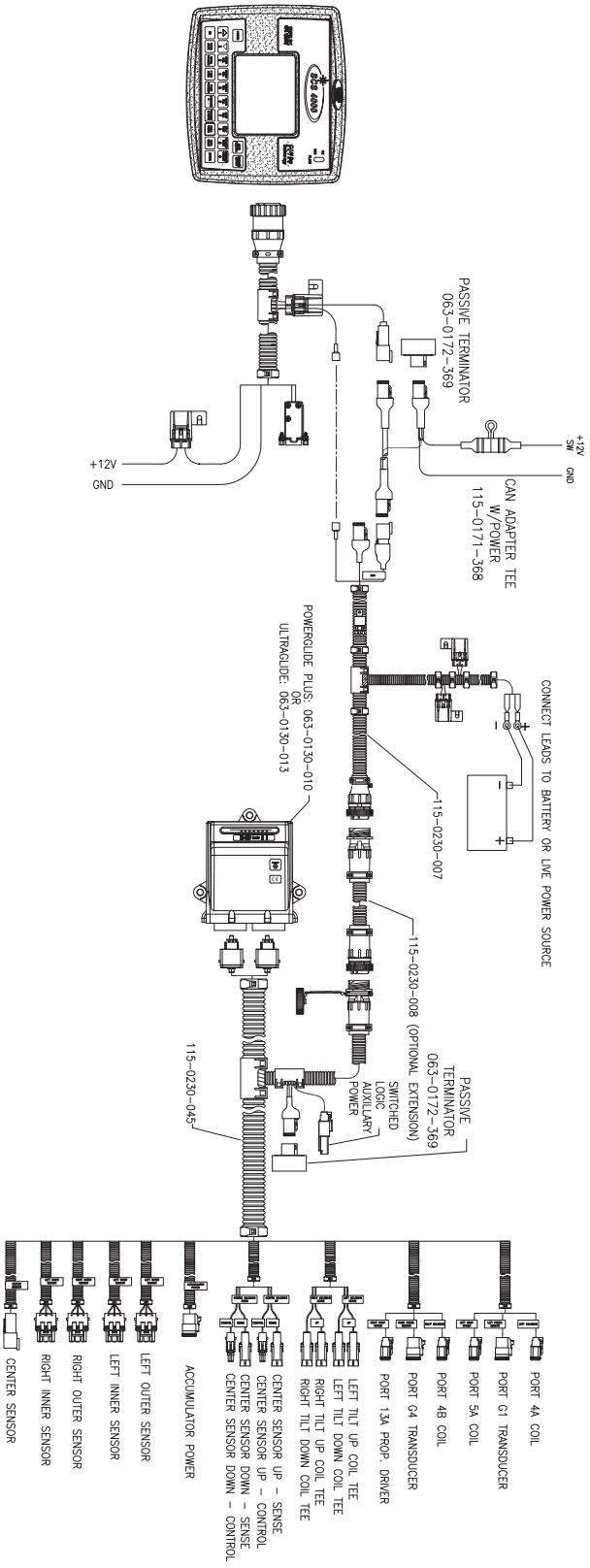
AutoBoom Controller



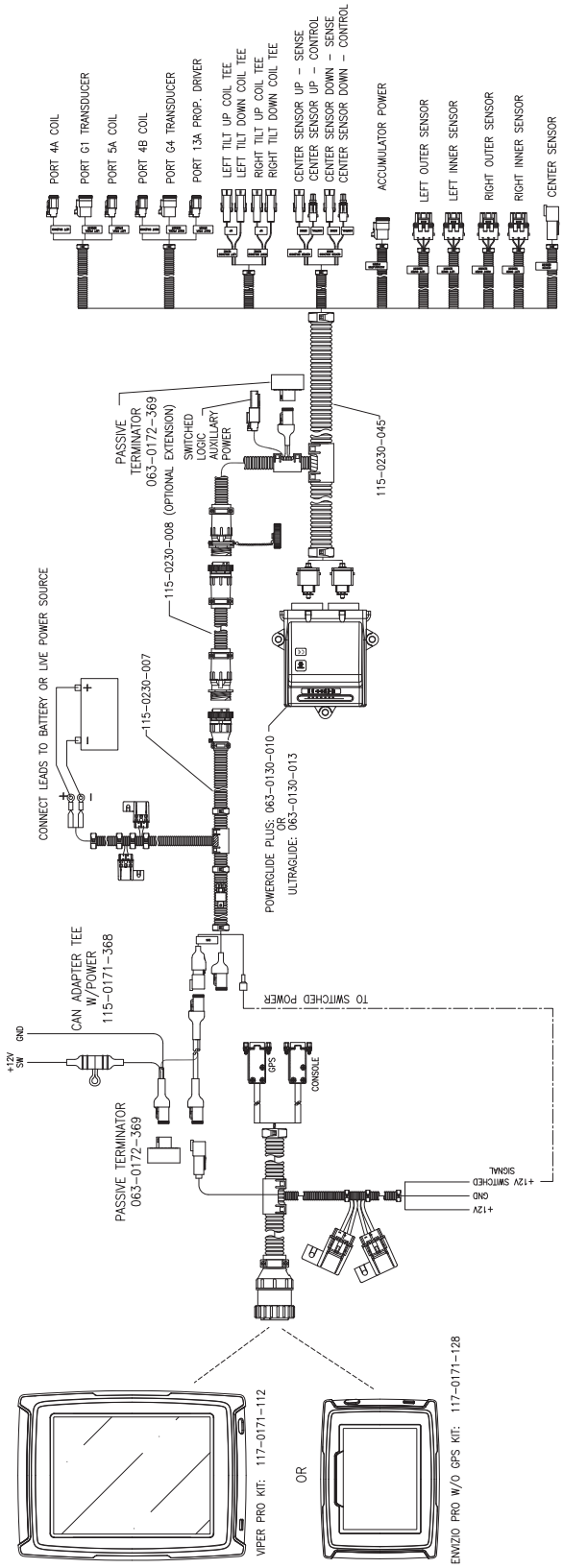
Envizio Plus



SCS 4000/5000



Viper Pro & Envizio Pro



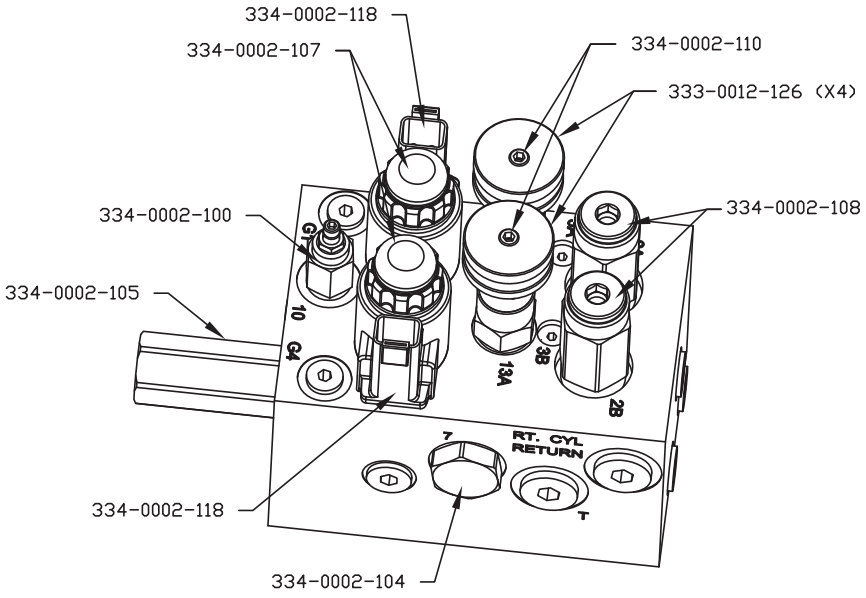
CHAPTER 6

Replacement Parts

This section contains replacement part diagrams for PowerGlide, PowerGlide Plus, and UltraGlide systems. Please refer to these diagrams when calling to request replacement parts.

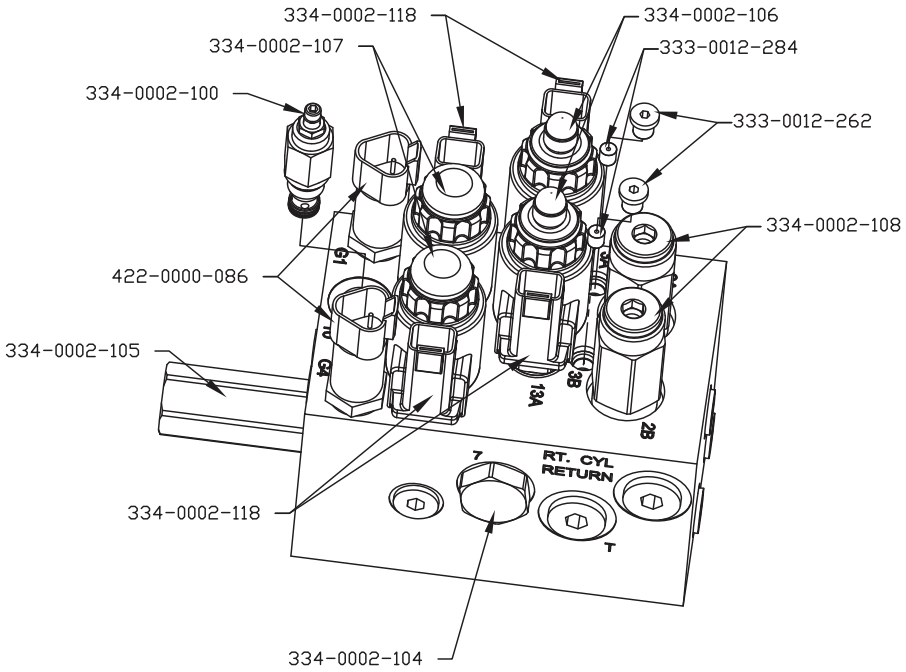
Valves

PowerGlide Replacement Parts



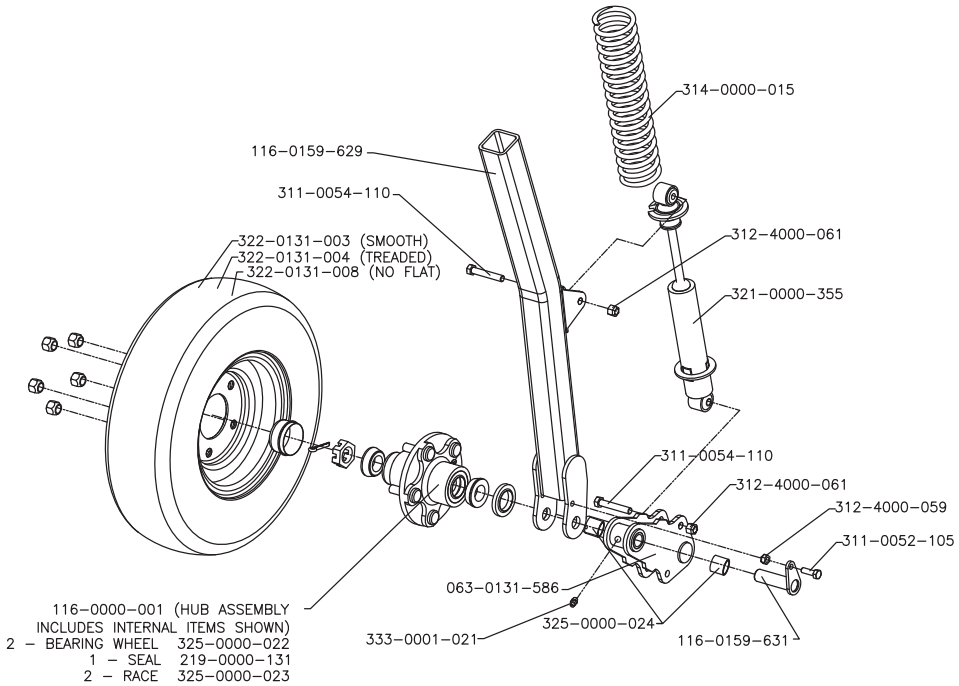
063-0131-127
VALVE, HYDRAULIC POWERGLIDE,
OPEN CENTER, AUTOBOOM

PowerGlide Plus and UltraGlide

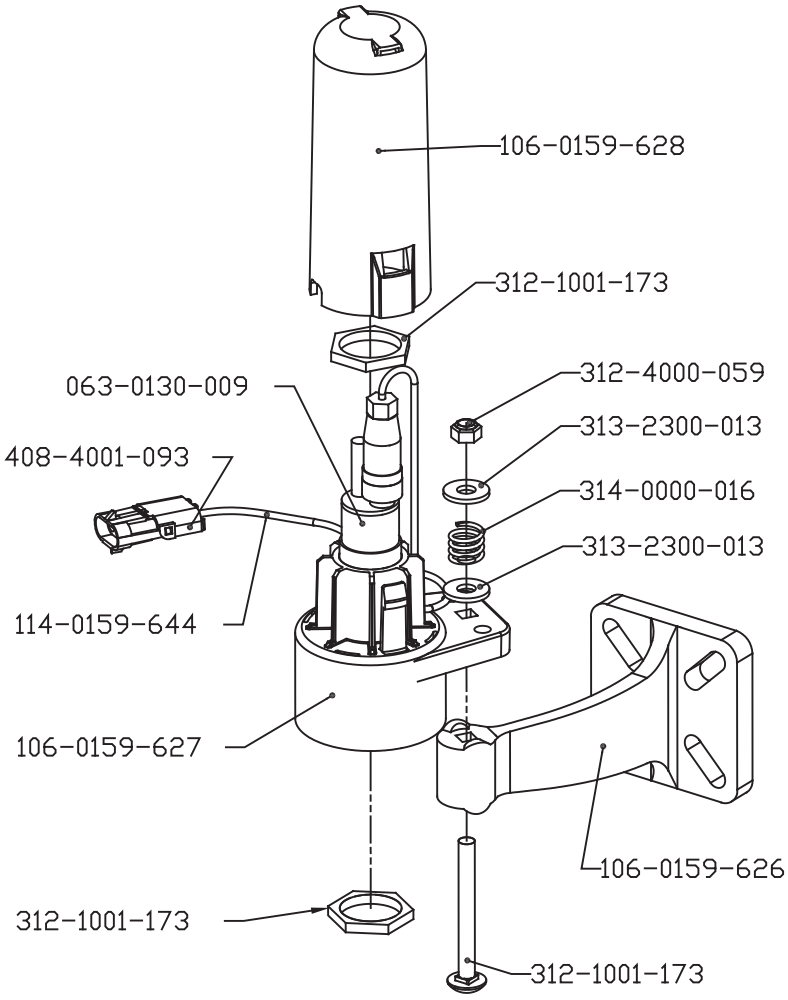


063-0131-126
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, OPEN CENTER, AUTOBOOM

Wheels



Sensors


106-0159-628
312-1001-173
063-0130-009
312-4000-059
313-2300-013
408-4001-093
314-0000-016
313-2300-013
114-0159-644
106-0159-627
106-0159-626
312-1001-173
312-1001-173

RAVEN

RAVEN INDUSTRIES

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Applied Technology Division products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is nontransferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If your dealer agrees with the warranty claim, the dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

What is not Covered by this Warranty?

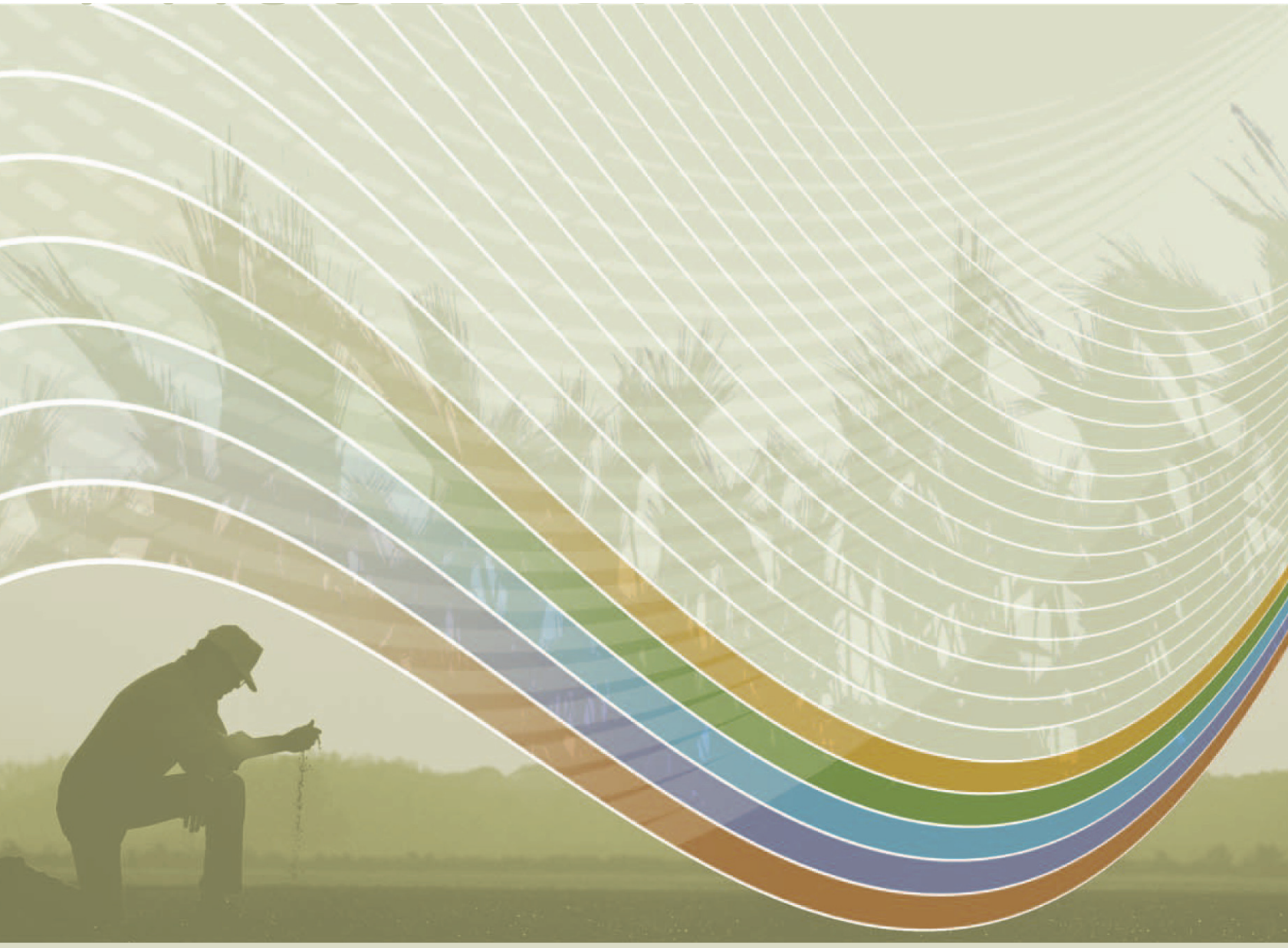
Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit or other special damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.

RAVEN

Simply improving your position.℠

Brandt
AutoBoom™ Installation Manual
(P/N 016-0230-029 Rev D 11/10 E16824)



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